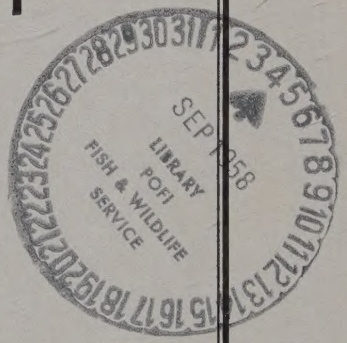
RIODICAL Internatl. Pacif. Salm. Fish. Comm.
Annual Report
1957
1957

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

APPOINTED UNDER A CONVENTION
BETWEEN CANADA AND THE UNITED STATES FOR THE
PROTECTION, PRESERVATION AND EXTENSION OF
THE SOCKEYE SALMON FISHERIES IN
THE FRASER RIVER SYSTEM

ANNUAL REPORT
1957



COMMISSIONERS

ARNIE J. SUOMELA	SENATOR THOMAS REID
MILO MOORE	A. J. WHITMORE
DeWITT GILBERT	F. D. MATHERS

NEW WESTMINSTER
CANADA
1958

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

MEMBERS AND PERIOD OF SERVICE SINCE THE INCEPTION OF THE COMMISSION IN 1937

CANADA

William A. Found	1937-1939
A. L. Hager	1937-1948
Senator Thomas Reid	1937-
A. J. Whitmore	1939-
Olof Hanson	1948-1952
H. R. MacMillan, C.B.E., D.Sc.	1952-1956
F. D. Mathers	1956-

UNITED STATES

Edward W. Allen	1937-1951 1957-1957
B. M. Brennan	1937-1942
Charles E. Jackson	1937-1946
Fred J. Foster	1943-1947
Milo Moore	1946-1949 1957-
Albert M. Day	1947-1954
Alvin Anderson	1949-1950
Robert J. Schoettler	1951-1957
Elton B. Jones	1951-1957
Arnie J. Suomela	1954-
DeWitt Gilbert	1957-

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

APPOINTED UNDER A CONVENTION
BETWEEN CANADA AND THE UNITED STATES FOR THE
PROTECTION, PRESERVATION AND EXTENSION OF
THE SOCKEYE SALMON FISHERIES IN
THE FRASER RIVER SYSTEM

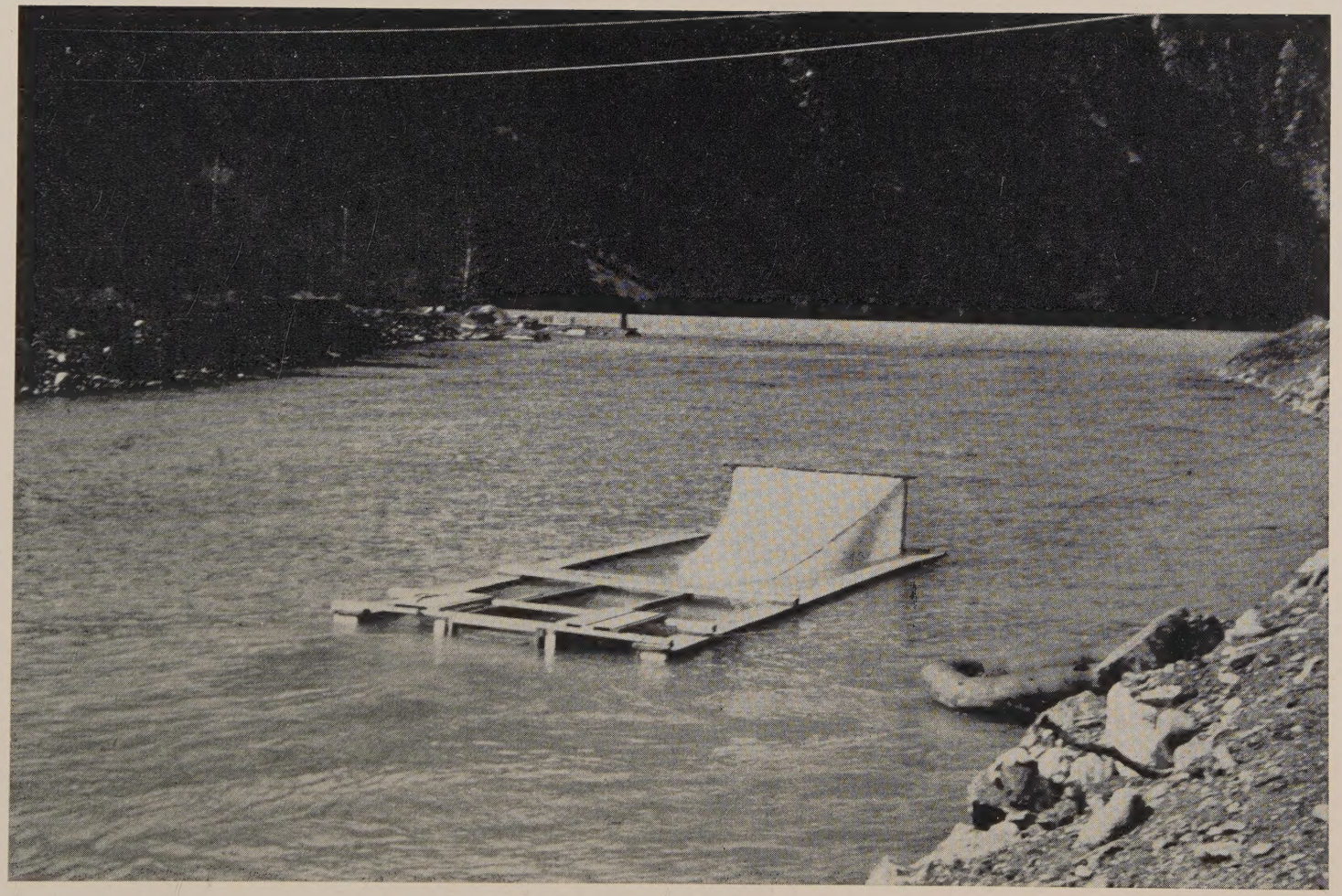
ANNUAL REPORT
1957

COMMISSIONERS

ARNIE J. SUOMELA	SENATOR THOMAS REID
MILO MOORE	A. J. WHITMORE
DeWITT GILBERT	F. D. MATHERS

DIRECTOR OF INVESTIGATIONS
LOYD A. ROYAL

NEW WESTMINSTER
CANADA
1958



Fish and power research at the Seton Creek hydroelectric station. The fyke net shown is being used to determine the rate of passage of sockeye migrants through the fourteen mile length of Seton Lake.

The Governments of Canada and the United States agreed through the Sockeye Salmon Fisheries Convention ratified in 1937, that the valuable sockeye fisheries of the Fraser River shall be protected, preserved and extended. The International Pacific Salmon Fisheries Commission was created to fulfill the purpose of the Convention through scientific investigation and regulation of the fishery. The Commission has issued annual reports which have documented its actions, defined existing problems and recorded the remarkable success of its operations in terms of increased sockeye populations. In the 1952 Annual Report to the High Contracting Parties it was reported that with a proper element of mutual tolerance and respect between general resource development and the development of the sockeye fishery of the Fraser River basin, the development of lands, minerals, timber and the water resources other than for hydroelectric power could proceed in a normal fashion.

On the basis of existing knowledge in 1952 the Commission could not find a solution to the fish and power problem on the Fraser River and in 1958 with a vastly greater knowledge the solution is still highly obscure.

Vast amounts of hydroelectric power lie undeveloped in the Upper Columbia River watershed which can be utilized to meet the power requirements of British Columbia. Either the development of the Fraser River or the diversion of the Columbia River to the Fraser River to create hydroelectric power would nullify the purpose of the Sockeye Fisheries Convention and destroy a valuable renewable natural resource.

To provide needed electrical energy and to continue the fulfillment of the purpose of the Sockeye Salmon Fisheries Convention between Canada and the United States the Commission respectfully recommends that the two governments reach an early and equitable agreement for the full development of the Upper Columbia River watershed.

INTERNATIONAL PACIFIC SALMON
FISHERIES COMMISSION

Senator Thomas Reid
Arnie J. Suomela
A. J. Whitmore
Milo Moore
F. D. Mathers
DeWitt Gilbert

REPORT OF THE INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION FOR THE YEAR 1957

The Government of the United States of America and the Government of Canada, desiring to co-ordinate the programs for the conservation of Fraser River sockeye and pink salmon stocks of common concern, agreed on the 28th day of December, 1956 to amend the Sockeye Salmon Fisheries Convention signed at Washington, D.C. on the 26th day of May, 1930. The agreement for co-ordinating the programs for the conservation of Fraser River sockeye and pink salmon stocks of common concern to the two governments became effective with an exchange of ratifications on July 3, 1957. Hereinafter the agreement to amend the Sockeye Salmon Fisheries Convention shall be known at the "Pink Salmon Protocol".

In order to facilitate an understanding of the effect of the Pink Salmon Protocol on the provisions of the Sockeye Salmon Fisheries Convention the two agreements have been consolidated and are presented herewith with the important note that the combined agreement shall apply to both sockeye and pink salmon.

ARTICLE I

The provisions of this Convention and the orders and regulations issued under the authority thereof shall apply, in the manner and to the extent hereinafter provided in this Convention, to the following waters:

1. The territorial waters and the high seas westward from the western coast of the Dominion of Canada and the United States of America and from a direct line drawn from Bonilla Point, Vancouver Island, to the lighthouse on Tatoosh Island, Washington — which line marks the entrance to Juan de Fuca Strait, — and embraced between 48 and 49 degrees north latitude, excepting therefrom, however, all the waters of Barklay Sound, eastward of a straight line drawn from Amphitrite Point to Cape Beale and all the waters of Nitinat Lake and the entrance thereto.

2. The waters included within the following boundaries:

Beginning at Bonilla Point, Vancouver Island, thence along the aforesaid direct line drawn from Bonilla Point to Tatoosh Lighthouse, Washington, described in paragraph numbered 1 of this Article, thence to the nearest point of Cape Flattery, thence following the southerly shore of Juan de Fuca Strait to Point Wilson, on Quimper Peninsula, thence in a straight line to Point Partridge on Whidbey Island, thence following the western shore of the said Whidbey Island, to the entrance to Deception Pass, thence across said entrance to the southern side of Reservation Bay, on Fidalgo Island, thence following the western and northern shore line of the said Fidalgo Island to Swinomish Slough, crossing the said Swinomish Slough, in line with the track of the Great Northern Railway, thence northerly following the shore line of the mainland to Atkinson Point at the northerly entrance to Burrard Inlet, British Columbia, thence in a straight line to the southern end of Bowen Island, thence westerly following the southern shore of Bowen Island to Cape Roger Curtis, thence in a straight line to Gower Point, thence westerly following the shore line to Welcome Point on Seechelt Peninsula, thence in a straight line to Point Young on Lasqueti Island, thence in a straight line to Dorcas Point on Vancouver Island, thence following the eastern and southern shores of the said Vancouver Island to the starting point at Bonilla Point, as shown on the British Admiralty Chart Number 579, and on the United States Coast and Geodetic Survey Chart Number 6300, as corrected to March 14, 1930, copies of which are annexed to this Convention and made a part thereof.

3. The Fraser River and the streams and lakes tributary thereto.

The High Contracting Parties engage to have prepared as soon as practicable charts of the waters described in this Article, with the above described boundaries thereof and the international boundary indicated thereon. Such charts, when approved by the appropriate authorities of the Governments of the Dominion of Canada and the United States of America, shall be considered to have been sub-

stituted for the charts annexed to this Convention and shall be authentic for the purposes of the Convention.

The High Contracting Parties further agree to establish within the territory of the Dominion of Canada and the territory of the United States of America such buoys and marks for the purposes of this Convention as may be recommended by the Commission hereinafter authorized to be established, and to refer such recommendations as the Commission may make as relate to the establishment of buoys or marks at points on the international boundary to the International Boundary Commission, Canada and United States-Alaska, for action pursuant to the provisions of the Treaty between His Majesty in respect of Canada and the United States of America, respecting the boundary between the Dominion of Canada and the United States of America, signed February 24, 1925.

ARTICLE II

The High Contracting Parties agree to establish and maintain a Commission to be known as the International Pacific Salmon Fisheries Commission, hereinafter called the Commission, consisting of six members, three on the part of the Dominion of Canada, and three on the part of the United States of America.

The Commissioners on the part of the Dominion of Canada shall be appointed by His Majesty on the recommendation of the Governor General in Council. The Commissioners on the part of the United States of America shall be appointed by the President of the United States of America.

The Commissioners appointed by each of the High Contracting Parties shall hold office during the pleasure of the High Contracting Party by which they were appointed.

The Commission shall continue in existence so long as this convention shall continue in force, and each High Contracting Party shall have power to fill and shall fill from time to time vacancies which may occur in its representation on the Commission in the same manner as the original appointments are made. Each High Contracting Party shall pay the salaries and expenses of its own Commissioners, and joint expenses incurred by the Commission shall be paid by the two High Contracting Parties in equal moieties.

ARTICLE III

The Commission shall make a thorough investigation into the natural history of the Fraser River sockeye (and pink) salmon, into hatchery methods, spawning ground conditions and other related matters. It shall conduct the sockeye (and pink) salmon fish cultural operations in the waters described in paragraphs numbered 2 and 3 of Article I of this Convention, and to that end it shall have power to improve spawning grounds, construct, and maintain hatcheries, rearing ponds and other such facilities as it may determine to be necessary for the propagation of sockeye (and pink) salmon in any of the waters covered by this Convention, and to stock any such waters with sockeye (and pink) salmon by such methods as it may determine to be most advisable. The Commission shall also have authority to recommend to the Governments of the High Contracting Parties removing or otherwise overcoming obstructions to the ascent of sockeye (and pink) salmon, that may now exist or may from time to time occur, in any of the waters covered by this Convention, where investigation may show such removal of or other action to overcome obstructions to be desirable. The Commission shall make an annual report to the two Governments as to the investigations which it has made and other action which it has taken in execution of the provisions of this Article, or of other Articles of this Convention.

The cost of all work done pursuant to the provisions of this Article, or of other Articles of this Convention, including removing or otherwise overcoming obstructions that may be approved, shall be borne equally by the two Governments, and the said Governments agree to appropriate annually such money as each may deem desirable for such work in the light of the reports of the Commission.

ARTICLE IV

The Commission is hereby empowered to limit or prohibit taking sockeye (and pink) salmon in respect of all or any of the waters described in Article I of this Convention, provided that no order limiting or prohibiting taking sockeye (and pink) salmon adopted by the Commission shall be construed to suspend or otherwise affect the requirements of the laws of the Dominion of Canada or of the State of Washington as to the procuring of a licence to fish in the waters on their respective sides of the boundary, or in their respective territorial waters embraced in paragraph numbered 1 of Article I of this Convention, and provided further that any order adopted by the Commission limiting or prohibiting taking sockeye (and pink) salmon on the High Seas embraced in paragraph numbered 1 of Article I of this Convention shall apply only to nationals and inhabitants and vessels and boats of the Dominion of Canada and the United States of America.

Any order adopted by the Commission limiting or prohibiting taking sockeye (and pink) salmon in the waters covered by this Convention, or any part thereof, shall remain in full force and effect unless and until the same be modified or set aside by the Commission. Taking sockeye (and pink) salmon in said waters in violation of an order of the Commission shall be prohibited.

ARTICLE V

In order to secure a proper escapement of sockeye (and pink) salmon during the spring or chinook salmon fishing season, the Commission may prescribe the size of the meshes in all fishing gear and appliances that may be operated during said season in the Canadian waters and/or the waters of the United States of America described in Article I of this Convention. At all seasons of the year the Commission may prescribe the size of the meshes in all salmon fishing gear and appliances that may be operated on the High Seas embraced in paragraph numbered 1 of Article I of this Convention, provided, however, that in so far as concerns the High Seas, requirements prescribed by the Commission under the authority of this paragraph shall apply only to nationals and inhabitants and vessels and boats of the Dominion of Canada and the United States of America.

Whenever, at any other time than the spring or chinook salmon fishing season, the taking of sockeye (and pink) salmon in Canadian waters or in waters of the United States of America is not prohibited under an order adopted by the Commission, any fishing gear or appliance authorized by the laws of the Dominion of Canada may be used in Canadian waters by any person thereunto duly authorized, and any fishing gear or appliance authorized by the State of Washington may be used in waters of the United States of America by any person thereunto authorized by the State of Washington. Whenever the taking of sockeye (and pink) salmon on the High Seas embraced in paragraph numbered 1 of Article I of this Convention is not prohibited, under an order adopted by the Commission, to the nationals or inhabitants or vessels or boats of the Dominion of Canada or the United States of America, only such salmon fishing gear and appliances as may have been approved by the Commission may be used on such High Seas by said nationals, inhabitants, vessels or boats.

ARTICLE VI

No action taken by the Commission under the authority of this Convention shall be effective unless it is affirmatively voted for by at least two of the Commissioners of each Contracting Party.

All regulations made by the Commission shall be subject to approval of the two Governments with the exception of orders for the adjustment of closing or opening of fishing periods and areas in any fishing season and of emergency orders required to carry out the provisions of the Convention.

ARTICLE VII

The Commission shall regulate the fisheries for sockeye and for pink salmon with a view to allowing, as nearly as practicable, an equal portion of such sockeye salmon as may be caught each year and an equal portion of such pink salmon as may be caught each year to be taken by the fishermen of each Party.

ARTICLE VIII

Each High Contracting Party shall be responsible for the enforcement of the orders and regulations adopted by the Commission under the authority of this Convention, in the portion of its waters covered by the Convention.

Except as hereinafter provided in Article IX of this Convention, each High Contracting Party shall be responsible, in respect of its own nationals and inhabitants and vessels and boats, for the enforcement of the orders and regulations adopted by the Commission, under the authority of this Convention, on the High Seas embraced in paragraph numbered 1 of Article I of the Convention.

Each High Contracting Party shall acquire and place at the disposition of the Commission any land within its territory required for the construction and maintenance of hatcheries, rearing ponds and other such facilities as set forth in Article III.

ARTICLE IX

Every national or inhabitant, vessel or boat of the Dominion of Canada or of the United States of America, that engages in sockeye (and pink) salmon fishing on the High Seas embraced in paragraph numbered 1 of Article I of this Convention, in violation of an order or regulation adopted by the Commission, under the authority of this Convention, may be seized and detained by the duly authorized officers of either High Contracting Party, and when so seized and detained shall be delivered by the said officers, as soon as practicable, to an authorized official of the country to which such person, vessel or boat belongs, at the nearest point to the place of seizure, or elsewhere, as may be agreed upon with the competent

authorities. The authorities of the country to which a person, vessel or boat belongs alone shall have jurisdiction to conduct prosecutions for the violation of any order or regulation, adopted by the Commission in respect of fishing for sockeye (and pink) salmon on the High Seas embraced in paragraph numbered 1 of Article I of this Convention, or of any law or regulation which either High Contracting Party may have made to carry such order or regulation of the Commission into effect, and to impose penalties for such violations; and the witnesses and proofs necessary for such prosecutions, so far as such witnesses or proofs are under the control of the other High Contracting Party, shall be furnished with all reasonable promptitude to the authorities having jurisdiction to conduct the prosecutions.

ARTICLE X

The High Contracting Parties agree to enact and enforce such legislation as may be necessary to make effective the provisions of this Convention and the orders and regulations adopted by the Commission under the authority thereof, with appropriate penalties for violations.

ARTICLE XI

The present Convention shall be ratified by His Majesty in accordance with constitutional practice and by the President of the United States of America, by and with the advice and consent of the Senate thereof, and it shall become effective upon the date of the exchange of ratifications which shall take place at Washington as soon as possible and shall continue in force for a period of sixteen years, and thereafter until one year from the day on which either of the High Contracting Parties shall give notice to the other of its desire to terminate it.

The approved understandings included in the Protocol of Exchange of Ratifications on the Sockeye Salmon Fisheries Convention *as they are now effective* are as follows:

1. The International Pacific Salmon Fisheries Commission shall have no power to authorize any type of fishing gear contrary to the laws of the State of Washington or the Dominion of Canada.
2. The Commission shall set up an Advisory Committee composed of six persons from each country who shall be representatives of the various branches of the industry including, but not limited to, purse seine, gill net, troll, sport fishing and processing, which Advisory Committee shall be invited to all non-executive meetings of the Commission and shall be given full opportunity to examine and to be heard on all proposed orders, regulations or recommendations.

In addition to specific amendments to the Sockeye Salmon Fisheries Convention already included herein the Pink Salmon Protocol adds two new provisions to the Convention as follows:

PROVISION I

"1. The Parties shall conduct a coordinated investigation of pink salmon stocks which enter the waters described in Article I of the Convention for the purpose of determining the migratory movements of such stocks. That part of the investigation to be carried out in the waters described in Article I of the Convention shall be carried out by the Commission.

2. Except with regard to that part of the investigation to be carried out by the Commission, the provisions of Article III of the Convention with respect to the sharing of cost shall not apply to the investigation referred to in this Article.

3. The Parties shall meet in the seventh year after the entry into force of this Protocol to examine the results of the investigation referred to in this Article and to determine what further arrangements for the conservation of pink salmon stocks of common concern may be desirable."

PROVISION II

"Nothing in the Convention or this Protocol shall preclude the Commission from recording such information on stocks of salmon other than sockeye or pink salmon as it may acquire incidental to its activities with respect to sockeye and pink salmon."

An additional action of significant importance to the future success of the Commission's operations was taken early in 1957 by the Government

of Canada and the Government of the United States in closing the high seas of the Eastern Pacific Ocean and the territorial waters adjacent thereto to net fishing for salmon. On November 21, 1955 and again on October 15, 1956, the Commission with the approval of its Advisory Committee made the following request of the respective governments "that the Canadian Government together with the Government of the United States support the principle that their nationals should not be permitted to fish for salmon on the high seas of the Eastern Pacific Ocean except with hook and line". It became obvious in 1955 and especially so in 1956 that a high seas net fishery would be effective on Fraser River sockeye as well as other salmon stocks both within and outside of Convention waters. The bilateral action of the two governments in preventing the development of such a net fishery avoided a situation which would have made the continued scientific management of the Fraser River sockeye fishery impossible.

COMMISSION MEETINGS

The International Pacific Salmon Fisheries Commission held nine official meetings during 1957. Recommendations for regulatory control of the sockeye fishery in Convention waters were discussed with the Advisory Committee at meetings held April 1 and 2 in Seattle, Washington and May 8 and 9 in Vancouver, B.C. The recommendations for regulating the 1957 sockeye fishery were approved at the latter meeting and were submitted for approval by the respective governments on May 14, 1957.

A general business meeting of the Commission was held on June 19, 1957 in Bellingham, Washington.

The Exchange of Ratifications in respect to the Pink Salmon Protocol on July 3, 1957 required that the Commission accept immediate responsibility on behalf of the Governments of Canada and the United States to protect, preserve and extend the pink salmon fisheries in the Fraser River in accordance with the provisions of the Sockeye Salmon Fisheries Convention. Meetings were held with the Advisory Committee of the Commission on July 12, 1957 in Bellingham, Washington and on July 26, 1957 also in Bellingham, Washington for the purpose of considering suitable recommendations for controlling the 1957 pink salmon fishing in Convention waters. Recommendations for regulating the pink salmon fishery favorably considered on July 26 were submitted for the approval of the respective governments on July 30, 1957.

A sixth meeting of the Commission was held in Bellingham, Washington on August 29, 1957 necessitated by the current imbalance of both sockeye and pink salmon catches in favor of the United States fishermen. A plan for additional regulatory action was designed to provide for an equitable sharing of the catch by the fishermen of both countries.

In accordance with a practice of meeting with representatives of both the Governments of Canada and the United States at least once every two years, the Commission met in Ottawa, Canada on November 18, 1957 and

in Washington, D.C. on November 19, 1957. The major subject of discussion of both meetings with the government representatives was the problem of fulfilling the terms of reference of the Sockeye Salmon Fisheries Convention as amended by the Pink Salmon Protocol in view of increased fishing efficiency, increased fishing area, and increased fishing effort by the fishing industry of both Canada and the United States.

The ninth and final meeting of the Commission was held with its Advisory Committee in open session with interested members of the fishing industry on December 16 and 17, 1957 in Seattle, Washington. A detailed report of the 1957 fishing season for sockeye and pink salmon in Convention waters was presented including an analysis of the results of the Commission's investigations directed to the Fraser River pink salmon. Tentative recommendations for control of the 1958 sockeye fishery in Convention waters were presented with associated facts to the Advisory Committee for their consideration and comment at a future meeting to be scheduled early in 1958.

Commissioners Elton B. Jones and Robert J. Schoettler, representing the United States Government, resigned during the year. Mr. Edward W. Allen received an interim appointment replacing Mr. Jones and in turn was replaced by Mr. DeWitt Gilbert. Milo Moore, Director of Fisheries for the State of Washington, was appointed to succeed Robert J. Schoettler. At the end of 1957 the Commission membership was as follows:

United States	*Canada*
Arnie J. Suomela	Senator Thomas Reid
Milo Moore	A. J. Whitmore
DeWitt Gilbert	Fred D. Mathers

Membership of the Advisory Committee to the International Pacific Salmon Fisheries Commission effective December 31, 1957 was as follows:

United States	*Canada*
John Plancich—	Richard Nelson—
Salmon Processors	Salmon Processors
N. Mladinich—	Charles Clarke—
Purse Seine Fishermen	Purse Seine Fishermen
Chester Karlson—	P. Jenewein—
Gill net Fishermen	Gill net Fishermen
John Brown—	H. North—
Troll Fishermen	Troll Fishermen
Howard Gray—	M. W. Black—
Sport Fishermen	Sport Fishermen

In order to facilitate a co-ordinated investigation of the migratory movements of the pink salmon stocks entering Convention waters as detailed in Article VI of the Pink Salmon Protocol or in Provision I of the amended Convention presented herein the following Co-ordinating Committee was assembled by mutual agreement.

Milo Moore, Director of Fisheries, State of Washington
Donald R. Johnson, Director of Research, Washington State Department of Fisheries

A. J. Whitmore, Chief Supervisor of Fisheries, Department of Fisheries of Canada
Dr. A. W. H. Needler, Director, Pacific Biological Station, Fisheries Research Board of Canada.
Loyd A. Royal, Director of Investigations, International Pacific Salmon Fisheries Commission

1957 REGULATIONS

Recommendations for regulations governing the 1957 sockeye fishery in Convention waters were adopted at a meeting of the Commission held with its Advisory Committee in Vancouver, B.C., on May 9, 1957. The regulatory recommendations were submitted to the Governments of the United States and Canada and the State of Washington on May 14, 1957.

The recommendations of the Commission for Convention waters were as follows:

"The International Pacific Salmon Fisheries Commission appointed pursuant to the Convention between Canada and the United States of America for the protection, preservation and extension of the Sockeye Salmon Fisheries in the Fraser River System, signed at Washington on the 26th day of May, 1930, hereby recommends that regulations to the following effect, in the interests of such fisheries, be adopted for Canadian Convention waters by Order-in-Council as amendments to the Special Fishery Regulations for British Columbia, for the season of 1957, under the authority of the Fisheries Act, and for United States Convention waters by the Director of Fisheries of the State of Washington by virtue of authority in him vested by Section 6 of Chapter 112 of the Laws of the State of Washington of 1949, namely:

In the United States and Canadian Convention waters of Juan de Fuca Strait lying westerly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia:

(a) Taking sockeye salmon shall be prohibited from five o'clock in the forenoon of Monday the 24th day of June, 1957 to five o'clock in the forenoon of Monday the 22nd day of July, 1957.

(b) Taking sockeye salmon by means of purse seine fishing gear shall be prohibited from five o'clock in the afternoon of Wednesday of each week to five o'clock in the forenoon of the Monday following and from five o'clock in the afternoon until five o'clock in the forenoon of the following day during such times as sockeye fishing by purse seine fishing gear is not otherwise prohibited and by means of gill net fishing gear from five o'clock in the forenoon of Thursday of each week to five o'clock in the afternoon of the Monday following and from five o'clock in the forenoon until five o'clock in the afternoon of each day during such times as sockeye fishing by gill net fishing gear is not otherwise prohibited and by trap fishing gear from five o'clock in the forenoon of Thursday of each week to five o'clock in the forenoon of the Monday following between the 22nd day of July, 1957 and the 12th day of August, 1957, both days inclusive.

In the Convention waters of the United States of America lying east-

erly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia:

(a) Taking sockeye salmon by means of purse seine and reef net fishing gear shall be prohibited from nine o'clock in the afternoon of Wednesday of each week to four o'clock in the forenoon of the Monday following and by means of gill net fishing gear from eight o'clock in the forenoon of Thursday of each week to six o'clock in the afternoon of the Monday following between the 26th day of June, 1957 and the 10th day of August, 1957, both days inclusive.

(b) Taking sockeye salmon by means of purse seine and reef net fishing gear shall be prohibited from nine o'clock in the afternoon of Wednesday of each week to four o'clock in the forenoon of the Monday following and by means of gill net fishing gear from eight o'clock in the forenoon of Wednesday of each week to six o'clock in the afternoon of the Sunday following between the 11th day of August, 1957 and the 19th day of August, 1957, both days inclusive.

In the Convention waters of Canada lying easterly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia, including all of District I and Areas 17, 18 and that part of Area 19 not otherwise regulated in the foregoing paragraphs:

(a) Taking sockeye salmon shall be prohibited from seven o'clock in the forenoon of Friday of each week to seven o'clock in the forenoon of the Tuesday following between the 26th day of June, 1957 and the 31st day of July, 1957.

(b) Taking sockeye salmon shall be prohibited from seven o'clock in the forenoon of Thursday of each week to seven o'clock in the forenoon of the Tuesday following between the 31st day of July, 1957 and the 3rd day of September, 1957.

All times hereinbefore mentioned shall be Pacific Standard Time."

On May 8, 1957 under the authority of the Sockeye Fisheries Convention the Commission made and adopted the following Orders and Regulations dealing with Convention waters westerly and outside of the Bonilla Point-Tatoosh Island line and on May 14, 1957 had them published in the British Columbian, New Westminster, B.C. and in the Bellingham Herald, Bellingham, Washington, to wit:

"1. It is hereby ordered that no sockeye salmon shall be fished for or taken at any time on the High Seas described in paragraph numbered 1 of Article I of the said Convention by any national or inhabitant or vessel or boat of the Dominion of Canada or the United States of America by any means other than by trolling gear consisting of a line, hook and lure drawn by a boat or vessel; and said gear is hereby approved for such use on the High Seas abovementioned.

2. It is hereby further ordered that the taking of sockeye salmon in respect of the said High Seas is hereby limited by and in accordance with the said Orders and Regulations above set forth.

3. Nothing in the above Orders or Regulations shall be construed to limit the means of taking of sockeye salmon for investigation purposes by the International Pacific Salmon Fisheries Commission or its duly authorized representative."

With the exchange of ratifications in respect to the Pink Salmon Protocol on July 3, 1957 amending the Sockeye Salmon Fisheries Convention to include pink salmon, recommendations for regulation of the pink salmon fishery were adopted by the Commission at their meeting with the Advisory Committee in Bellingham, Washington on July 26, 1957 and submitted to the Departments of Fisheries of Canada and of the State of Washington and to the Secretary of the Interior at Washington, D.C. on July 30, 1957. The regulations were accepted for Canadian waters by an Order-in-Council on August 16, 1957 and for United States waters by an Order of the Director of the Washington State Department of Fisheries on August 12, 1957. The recommendations of the Commission for regulation of the fishery in Convention waters during the period of the pink salmon migration were as follows:

Canadian Convention Waters

"The International Pacific Salmon Fisheries Commission appointed pursuant to the Convention between Canada and the United States of America for the protection, preservation and extension of the Sockeye Salmon Fisheries in the Fraser River System, signed at Washington on the 26th day of May, 1930, as amended by the Pink Salmon Protocol signed at Ottawa on the 28th day of December, 1956, hereby recommends that regulations to the following effect, in the interests of such fisheries, be adopted by Order-in-Council as amendments to the Special Fishery Regulations for British Columbia, for the season of 1957, under the authority of the Fisheries Act, namely:

In the Canadian Convention waters of Juan de Fuca Strait lying westerly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia:

(a) Taking sockeye and pink salmon by means of purse seine fishing gear shall be prohibited from five o'clock in the afternoon of Thursday of each week to five o'clock in the forenoon of the Monday following and from five o'clock in the afternoon until five o'clock in the forenoon of the following day during such times as sockeye and pink salmon fishing by purse seine fishing gear is not otherwise prohibited and by means of gill net fishing gear from five o'clock in the forenoon of Friday of each week to five o'clock in the afternoon of the Monday following and from five o'clock in the forenoon until five o'clock in the afternoon of each day during such times as sockeye and pink salmon fishing by gill net fishing gear is not otherwise prohibited and by trap fishing gear from five o'clock in the forenoon of Friday of each week to five o'clock in the forenoon of the Monday following between the 13th day of August, 1957 and the 31st day of August, 1957, both days inclusive.

(b) Taking sockeye and pink salmon by means of purse seine fishing gear shall be prohibited from six o'clock in the afternoon of Thursday of each week to six o'clock in the forenoon of the Monday following and from six o'clock in the afternoon until six o'clock in the forenoon of the following day during such times as sockeye and pink salmon fishing by purse seine fishing gear is not otherwise prohibited

and by means of gill net fishing gear from six o'clock in the forenoon of Friday of each week to six o'clock in the afternoon of the Monday following and from six o'clock in the forenoon until six o'clock in the afternoon of each day during such times as sockeye and pink salmon fishing by gill net fishing gear is not otherwise prohibited and by trap fishing gear from six o'clock in the forenoon of Friday of each week to six o'clock in the forenoon of the Monday following between the 1st day of September, 1957 and the 22nd day of September, 1957, both days inclusive.

In the Convention waters of Canada lying easterly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia, including all of District I and Areas 17, 18 and that part of Area 19 not otherwise regulated in the foregoing paragraphs:

(a) Taking sockeye and pink salmon shall be prohibited from seven o'clock in the forenoon of Thursday of each week to seven o'clock in the forenoon of the Tuesday following between the 3rd day of September, 1957 and the 21st day of September, both days inclusive.

(b) Taking sockeye and pink salmon shall be prohibited from the 22nd day of September, 1957 to the 7th day of October, 1957, both days inclusive except with nylon nets of not less than 9¾ inches extension measure or with linen nets of not less than 9 inches extension measure from seven o'clock in the forenoon of Tuesday of each week to seven o'clock in the forenoon of Friday of each week provided the operation of such nets is permitted under authority of the Fisheries Act.

All times hereinbefore mentioned shall be Pacific Standard Time."

United States Convention Waters

"The International Pacific Salmon Fisheries Commission appointed pursuant to the Convention between Canada and the United States of America for the protection, preservation and extension of the Sockeye Salmon Fisheries in the Fraser River System, signed at Washington on the 26th day of May, 1930, as amended by the Pink Salmon Protocol signed at Ottawa on the 28th day of December, 1956, hereby recommends to the Director of Fisheries of the State of Washington that regulations to the following effect, in the interests of such fisheries, be adopted by him for the year 1957 by virtue of authority in him vested by Section 6 of Chapter 112 of the Laws of the State of Washington of 1949, namely:

In the United States Convention waters of Juan de Fuca Strait lying westerly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia:

(a) Taking sockeye and pink salmon by means of purse seine fishing gear shall be prohibited from five o'clock in the afternoon of Thursday of each week to five o'clock in the forenoon of the Monday following and from five o'clock in the afternoon until five o'clock in the forenoon of the following day during such times as sockeye and pink salmon fishing by purse seine fishing gear is not otherwise prohibited and by means of gill net fishing gear from five o'clock in the forenoon of Friday of each week to five o'clock in the afternoon of the

Monday following and from five o'clock in the forenoon until five o'clock in the afternoon of each day during such times as sockeye and pink salmon fishing by gill net fishing gear is not otherwise prohibited between the 13th day of August, 1957 and the 31st day of August, 1957, both days inclusive.

(b) Taking sockeye and pink salmon by means of purse seine fishing gear shall be prohibited from six o'clock in the afternoon of Thursday of each week to six o'clock in the forenoon of the Monday following and from six o'clock in the afternoon until six o'clock in the forenoon of the following day during such times as sockeye and pink salmon fishing by purse seine fishing gear is not otherwise prohibited and by means of gill net fishing gear from six o'clock in the forenoon of Friday of each week to six o'clock in the afternoon of the Monday following and from six o'clock in the forenoon until six o'clock in the afternoon of each day during such times as sockeye and pink salmon fishing by gill net fishing gear is not otherwise prohibited between the 1st day of September, 1957 and the 22nd day of September, 1957, both days inclusive.

In the Convention waters of the United States of America lying easterly of a straight line drawn from Angeles Point in the State of Washington across Race Rocks to William Head in the Province of British Columbia:

(a) Taking sockeye and pink salmon by means of purse seine and reef net fishing gear shall be prohibited from eight o'clock in the afternoon of Thursday of each week to five o'clock in the forenoon of the Monday following and from eight o'clock in the afternoon until five o'clock in the forenoon of the following day during such times as sockeye and pink salmon fishing by purse seine and reef net fishing gear is not otherwise prohibited and by means of gill net fishing gear from eight o'clock in the forenoon of Thursday of each week to five o'clock in the afternoon of the Sunday following and from eight o'clock in the forenoon until five o'clock in the afternoon of each day during such times as sockeye and pink salmon fishing by gill net fishing gear is not otherwise prohibited between the 11th day of August, 1957 and the 29th day of September, 1957, both days inclusive. (This amends existing regulations for fishing in specified waters commencing August 11, 1957.)

All times hereinbefore mentioned shall be Pacific Standard Time."

At a Commission meeting held on July 12, 1957 the Commission adopted Orders and Regulations pertaining to the taking of pink salmon in Convention waters westerly of the Bonilla Point-Tatoosh Island line. These were duly published in the British Columbian, New Westminster, B.C. and the Bellingham Herald, Bellingham, Washington.

1. It is hereby ordered that no pink salmon shall be fished for or taken at any time on the High Seas described in paragraph numbered 1 of Article I of the said Convention by any national or inhabitant or vessel or boat of the Dominion of Canada or the United States of America by any means other than by trolling gear consisting of a line, hook and lure drawn by a boat or vessel; and said gear is hereby approved for such use on the High Seas abovementioned.
2. It is hereby further ordered that the taking of pink salmon in

respect of the said High Seas is hereby limited by and in accordance with the said Orders and Regulations above set forth.

3. Nothing in the above Orders or Regulations shall be construed to limit the means of taking of pink salmon for investigation purposes by the International Pacific Salmon Fisheries Commission or its duly authorized representative.

Emergency Amendments

In order to facilitate adequate escapement and equal division of the season's catch the approved regulations as detailed above were later amended on the recommendation of the International Pacific Salmon Fisheries Commission.

The first of these actions was taken effective August 1 when an additional 24 hours was added to the current fishing week for the Canadian Convention waters easterly of the Port Angeles-William Head line in an effort to obtain a more equitable division of the catch between the two nationals. Effective August 7 action was taken in the interest of both escapement and division, resulting in a 24-hour reduction in fishing time in all United States Convention waters and a 24-hour reduction in Canadian Convention waters easterly of the Port Angeles-William Head line. Effective August 15 the third action was taken by the Commission. As the United States share of the divisible sockeye catch was still 250,000 ahead of the Canadian the United States fishing time was reduced by 24 hours and the Canadian fishing time easterly of the Port Angeles-William Head line increased by 24 hours. On August 20, in order to more nearly equal division in the catch of sockeye and pink salmon by Canadian fishermen two additional 24-hour extensions in the Canadian fishing time were made effective August 22 and 26 in the waters easterly of the Port Angeles-William Head line. The fifth action to obtain equal division was taken on August 29 when the fishing time in United States Convention waters was reduced by 24 hours effective September 5 and 24 hours were added to the fishing time in Canadian Convention waters easterly of the Port Angeles-William Head line effective September 2. On September 4 the Canadian catch of pink salmon was 310,000 behind that of the United States, much of this disparity being due to large catches of "blow-backs" in the Point Roberts area. Consequently all net fishing in United States Convention waters lying westerly of a straight line drawn true south from the West Point Roberts light to its point of intersection with the international boundary was closed from September 8 to September 29 inclusive. To further aid in equalization of the catch, the fishing time in Canadian Convention waters westerly of the Port Angeles-William Head line was increased by 24 hours effective September 6 and in the Canadian waters easterly of this line but westerly of a line projected from the bell buoy off Point Grey to the light on the north westerly end of the North Arm jetty thence to the Sand Heads light thence to Canoe Pass buoy, thence true south to the point of intersection with the international boundary the fishing time was increased by 48 hours on September 5 and 6. The following

week the Canadian catch of pink salmon was still considerably less than that of the United States so a further 24 hours fishing was permitted in the Juan de Fuca Strait on September 13 and an additional 48 hours fishing effective September 12 and 13 in the Strait of Georgia area defined above. On September 13 the eighth emergency amendment to the regulations was made in the interest of equitable division of the pink and sockeye catch. Fishing time was reduced by 24 hours for two weeks in all United States Convention waters effective September 19 and September 26 and an increase of 24 hours fishing time was allowed in the Canadian waters of the Strait of Georgia effective September 16. On September 18 a further extension of 48 hours was made for the Canadian "Gulf area" permitting fishing to continue in these waters until 7:00 a.m. on September 21.

SOCKEYE SALMON REPORT

The United States Fishery

In accordance with pre-season predictions to the industry the size of the 1957 sockeye run was below that of the previous cycle because of poor ocean survival. The peak of the run was later and extended over a longer period of time than was the case in the preceding cycle year. This change in timing, with an early run alternating with a late run every eight years, appears to be related to alternating full moon and new moon phases which also follow an eight year cycle. The exact relationship of the moon phase to the timing of the run is not known but when the peak of the run falls at or near the timing of the full moon the run tends to be compact and several days early; when the peak of the run occurs at or near the new moon (dark of the moon) the run is several days later and is extended in timing. Since the timing of the two phases of the moon alternate on an eight year cycle and the tides are approximately the same every four years it is assumed, pending further study, that the timing of the run is being modified by the moon phase rather than by the tides. The importance to regulation of alternate timing in cycle runs is best illustrated in Table III. The greater share of the season's catch was taken in July of 1945 and 1953 when the main run occurred near a full moon and in August of 1949 and 1957 when the peak of the run occurred near a new moon.

The United States fishing fleet harvested 1,689,265 sockeye or 35.12 per cent of the total run of 4,809,842 sockeye which, in view of the cycle decline of 11.05 per cent from the 1953 run of 5,407,266 sockeye, constituted a maximum catch consistent with good management.

A small sized fish was expected in 1957 but the average weight for the season was unusually low being 5.27 pounds for four-year-old sockeye compared with 6.08 pounds in 1953 and with 5.64 pounds for the cycle average. Because of the small sized fish the United States gill net fishery was a failure, producing an average of only 449 fish per boat for the season. The purse seine catch was almost equal to that of the preceding cycle

in spite of a decline in the total United States catch of 16.88 per cent over that of the preceding cycle in 1953 (Tables I, II and III). An additional reason for the relatively high purse seine catch was the phenomenal number of three-year-old sockeye which were available to them but were unavailable to the gill net fishery because of their small size.

The inability of the extensive gill net fishery to catch significant numbers of sockeye resulted in a belief by the United States industry during the season that surplus numbers of sockeye were escaping the fishing area. However, since the United States catch was actually normal in relation to the fishing time granted, it is evident the gear as a whole was highly efficient in taking practically all the fish available during the fishing period.

The Canadian Fishery

The fishery in the Convention waters of Canada took a total of 1,360,760 sockeye or 28.24 per cent of the total run (Table IV). The Canadian share of the catch was substantially below that of the United States; of this difference 161,117 fish was due to a strike of Canadian fishermen during the early part of the fishing season from June 22 to July 13. The remaining difference in the catch of 167,388 sockeye can be mainly attributed to three factors; 1. An undercalculation of the size of the weekly escapement resulting in what later proved to be an unnecessary 24 hour reduction in fishing time on August 7 in the Fraser River area, 2. A phenomenal run of three-year-olds in late August and September which were available to a large United States purse seine fleet but which could not be taken by the Fraser River gill net fishery because of the small size of the fish, and 3. A small 'drift back' of delaying sockeye, consisting largely of three-year-olds, to the Point Roberts fishing area where they become available to the United States fleet for the second time.

Expansion of Canadian fishing effort continued in Juan de Fuca Strait and 52.6 per cent of the total Canadian sockeye catch was taken here. The year 1957 is the first time on this cycle since the beginning of the Juan de Fuca Strait fishery in which over half of the total Canadian sockeye catch was taken in this area.

Escapement

The net escapement from the commercial and Indian fishery (Table VI) as measured on the spawning grounds was 34.59 per cent of the total 1957 run of 4,809,842 sockeye. The 1957 escapement represents a significant numerical increase over the escapement of the brood year. All major spawning areas contributing substantially to the catch of this cycle had a large increase in the number of spawning sockeye. The historically famous Quesnel River system received 229,055 spawning sockeye, an increase of 113.08 per cent over the number recorded in 1953. On the Late Stuart spawning grounds 526,920 fish were counted, this number representing an increase of 50 per cent over the number of spawners recorded in 1953.

The early arrival of the 1953 adults on the spawning grounds of the Quesnel River system and those of the late run to the Stuart River system resulted in a substantial mortality in unspawned fish due to adverse water temperatures. The later arrival of the spawning escapement in 1957 proved to be extremely beneficial in terms of eggs deposited because of favorable environmental conditions. Approximately three times as many eggs were actually deposited by the Late Stuart and Quesnel spawners in 1957 as were deposited in the brood year of 1953.

The only known adverse factor affecting the 1957 spawning escapement was a temporary block at Bridge River Rapids. On August 9 information was received from the local fisheries protection officer at Lillooet, B.C. that very few fish were able to reach the entrance of the lower rapids fishway because of unfavorable water conditions. Immediate action was taken and with the aid of the Provincial Department of Public Works a channel was opened through a rock projection which enabled sockeye to start moving through the fishway. Tens of thousands of sockeye which escaped the commercial fishery on the weekend of August 2 to August 6 were temporarily blocked but no damage to the run is believed to have occurred except to an estimated 5000 sockeye which backed downstream and delayed in the mouth of Bridge River for an extended period of time.

In general, the 1957 escapement of sockeye was excellent and spawning conditions were very good. From a management viewpoint it may be stated that the regulatory requirements have been fulfilled for providing a large potential increase in the size of the future cycle run in 1961. However, it should be pointed out that low sea survival has been a major factor in controlling the size of the 1955, 1956, and 1957 runs and the effect of ocean conditions on the size of the cycle run in 1961 will not be measurable to any degree until the return of three-year-olds in 1960.

The comparative cycle record of the spawning escapements to the individual spawning streams is recorded in Table VI.

Rehabilitation of Barren Areas

The Commission has been successful in preliminary experiments designed to restore sockeye runs in barren streams. Returns of adults were obtained from plants of eyed eggs, in both Upper Adams River and Portage Creek in 1954, and this method of transplantation has since been continued. In 1957, about 520,000 eggs were taken from sockeye in the Seymour River, eyed in the Seymour River, and then planted in the eyed stage in Upper Adams. The Barriere River was also seeded with 550,000 eyed eggs of Raft River origin. A random sample of eggs dug in December from the Barriere River plant indicated an excellent survival to the beginning of hatching.

Experiments with artificial aids for the extension of the sockeye fishery are being continued at the Quesnel Field Station on Horsefly Lake. Survival of fry from the artificial spawning ground at the station has been consistently higher than from natural spawning grounds. The sections in

which transplanted Stellako River fish spawned produced fry this spring from 39 to 53 per cent of the eggs deposited, as compared with 45 to 62 per cent in 1956 from the same brood stock. The artificial plants of green eggs of Stellako River stock showed relatively poor survival in 1957 in contrast to the results shown in the 1955-56 experiment. Last year the survival varied from 43 to 71 per cent, while this year the range was 9 to 16 per cent. Unavoidable delays in transporting and planting some of the eggs are believed to have caused the mortality in the current year. A hatchery experiment showed for the second time that sockeye eggs incubated in darkness suffer less mortality to the fry stage than those reared in normal hatchery light.

In the fall of 1957, 749 adult sockeye from the Horsefly River were placed in the artificial spawning ground to test the effects of heavy natural seeding. The success of egg deposition was only 59 to 76 per cent in the heavily-populated sections where each female was allowed an average of only eleven square feet of gravel area for spawning. In the sections where each female was allowed from 16 square feet to 61 square feet of gravel, the success of egg deposition varied from 78 to 92 per cent. The 1957 hatchery operations were designed so as to produce as many fry as possible to supplement production from the artificial spawning ground. Two million nine hundred forty-six thousand eggs were taken from Horsefly River fish and placed in darkened troughs in the hatchery. It is anticipated that well over three million fry will be liberated into Horsefly Lake in the spring of 1958 from the combined survival of fry in the hatchery and artificial spawning ground.

To the present time releases of fry from artificial spawning ground experiments have produced only small numbers of seaward-bound migrants leaving Horsefly Lake. It is not known whether this lack of yearling smolts has been due to unusual mortality in Horsefly Lake, migration out of the lake as underyearlings, or landlocking due to the physical character of the lake watershed. The release of more than three million fry in the spring of 1958 is expected to indicate which of the above factors is operative and provide information as to whether or not Horsefly Lake can be brought into production as a lake rearing area.

More than 1,000 adult sockeye were transported above a series of falls in the Horsefly River to determine whether or not they would spawn successfully in a large potential spawning area. If spawning was successful, fishways could be built to make the upper river accessible. Tag returns showed that all of the fish moved downstream over the falls to spawn in their traditional spawning grounds below the falls. Any future attempts to determine the suitability of the area above the falls as a natural spawning area will require the construction of a rather expensive barrier fence to prevent the downstream movement of adults over the falls.

General Investigations

Research activities related to management and watershed protection

were continued during the year in accordance with the procedures published in the 1955 Annual Report of the International Pacific Salmon Fisheries Commission. Special attention was given to investigations which would measure the tolerance of sockeye to environmental changes during migration, spawning and incubation of the eggs, also to experimentation for determining methods of alleviating the adverse effects of potential power developments in the Fraser River watershed.

PINK SALMON REPORT

The ratification of the Pink Salmon Protocol on July 3, 1957, transferred the primary responsibility for protecting, preserving, and extending the pink salmon fishery of the Fraser River system to the International Pacific Salmon Fisheries Commission. To permit the Commission to fulfill its new terms of reference in respect to the pink salmon, all of the responsibilities of the Commission relating to sockeye salmon including the right to regulate the fishery in Convention waters, were broadened, effective immediately, to include pink salmon. Since the pink salmon occur in significant numbers in Convention waters only on the odd numbered years and the 1957 run was due to start in a few weeks after the ratification of the Protocol, only a cursory examination of the available historical data was possible prior to the formulation of the 1957 regulations.

The historical records plainly revealed that the Hell's Gate slide in 1913 was equally, if not more disastrous to the Fraser River pink salmon populations than it was to the sockeye populations. In the report of the Provincial Fisheries Department (1913) Mr. John P. Babcock stated as follows: "Notwithstanding the fact that this was a humpback (pink) salmon year, and that in former years of their runs, millions of humpback spawned in Seton Creek and the Thompson River, not a single one of that species reached these streams or any other stream north of the Fraser River canyon this year." The Provincial Fisheries Department reports reveal that no pink salmon appeared above Hell's Gate in any cycle year following 1913 until the Hell's Gate fishways become operative in 1945. After the latter year, the salmon began appearing on their former spawning grounds above the fishways and by 1955 thousands of spawning fish were reported by Federal fisheries inspectors in both Seton Creek and the Thompson River. The historical records show conclusively that there was a substantial run of pink salmon to the spawning areas above Hell's Gate up to 1913; that the run of pink salmon above Hell's Gate was destroyed in 1913; and that the run is now gradually restoring itself since the construction of the Hell's Gate fishways.

The market for pink salmon was not fully developed prior to 1913 hence the pack figures that are available for this species do not indicate the true magnitude of the run prior to the effects of the Hell's Gate slide. In an attempt to eliminate the effect of lack of market and to produce a

TABLE I

SOCKEYE CATCH BY GEAR

United States Convention Waters

Year	Purse Seines			Gill Nets			Reef Nets			Total Catch
	Units	Catch	Percentage	Units	Catch	Percentage	Units	Catch	Percentage	
1945	91	605,962	85.78	46	32,245	4.56	39	68,257	9.66	706,464
1949	277	850,451	80.48	248	123,048	11.64	116	83,293	7.88	1,056,792
1953	247	1,355,734	66.70	322	427,836	21.05	96	248,867	12.25	2,032,437
1957	234	1,237,665	73.27	638	286,614	16.97	87	164,951	9.76	1,689,265

Canadian Convention Waters

Year	Purse Seines			Gill Nets			Traps			Total Catch
	Units	Catch	Percentage	Units	Catch	Percentage	Units	Catch	Percentage	
1945	0	0	.00	1,333	939,000	96.86	5	30,444	3.14	969,444
1949	40	111,834	10.96	1,382	857,902	84.04	5	51,063	5.00	1,020,799
1953	66	600,449	30.14	1,482	1,331,823	66.85	4	60,071	3.01	1,992,343
1957	104	522,426	38.39	1,309	820,850	60.32	5	15,759	1.16	1,360,760

NOTE: Gear counts represent the maximum number of units delivering sockeye on any single day.

TABLE II

CYCLIC LANDINGS AND PACKS OF SOCKEYE

	United States	*Canada*	*Total*
* 1957			
Total Landings (No. Sockeye)	1,689,265	1,360,760	3,050,025
Share in Fish	55.39%	44.61%	
Total Pack (48 lb. Cases)	119,985	99,398	219,383
Share in Pack	54.69%	45.31%	
1954-1957			
Total Landings (No. Sockeye)	8,409,005	8,086,140	16,495,145
Share in Fish	50.98%	49.02%	
Total Pack (48 lb. Cases)	790,669	765,876	1,556,545
Share in Pack	50.80%	49.20%	
1950-1953			
Total Landings (No. Sockeye)	5,503,600	5,329,357	10,832,957
Share in Fish	50.80%	49.20%	
Total Pack (48 lb. Cases)	527,570	507,821	1,035,391
Share in Pack	50.95%	49.05%	
1957 *Cycle Pack*			
1957	119,985	99,398	219,383
1953	178,323	176,097	354,420
1949	80,547	80,629	161,176
1945	53,054	79,781	132,835
1941	110,605	159,279	269,884
1937	60,259	100,272	160,531
1933	128,518	52,465	180,983
**1929	111,898	61,569	173,467
1925	112,023	35,385	147,408
1921	102,967	39,631	142,598
1917	411,538	148,164	559,702
1913	1,673,099	719,796	2,392,895
1909	1,097,904	585,435	1,683,339
1905	837,122	837,489	1,674,611

* 17 Canneries in the United States and 10 canneries in Canada received the sockeye caught in Convention waters.

** 1905 to 1929 from Pacific Fisherman, 1948 Yearbook Number, p. 139.

Note: The United States divisible share of the 1957 catch was 1,527,877 or 52.89%. A total of 161,388 fish are not credited to division because of a Canadian fishermen's strike from June 22 to July 13.

TABLE III

DAILY CATCH OF SOCKEYE, 1945-1949-1953-1957 FROM UNITED STATES CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1945	1949	1953	1957	1945	1949	1953	1957	1945	1949	1953	1957
1	2		24,386	10,165	45,429	112,059				6,451	1,308	
2			32,371	11,833	28,079	66,263			699	4,114	1,052	7,288
3	187		39,812	13,977	12,686	66,066	221		157		1,035	25,515
4	86						53,931		318	4,205	2,965	19,653
5	163				21,428	44,124	50,982	247,511	886	3,641		
6	324		48,620		13,760		25,206	135,265	577	2,198	1,115	
7			69,419		10,841		25,184		270	1,447	782	
8	2,431		54,566	42,804	11,967	70,581	2,478			907	760	
9	4,439		57,435	57,639	7,446	52,300	1,288		1,035	580	897	1,852
10	3,919		32,395	23,464	6,354	31,270	37,018		635		509	3,333
11	2,255					27,103	32,769		448	453	606	4,583
12	1,336				5,502	30,028	22,964	169,312	34	334		1,451
13	793		15,334		4,685		21,929	121,946	168	239	423	5
14			26,643		2,572		21,643	71,364	39	53	331	
15	3,332		33,824	39,662	3,581	31,842	3,973			28	344	
16	4,560		35,305	37,687	3,752	21,523	2,421		23	22	228	109
17	7,827		27,075	33,138	2,979	22,538	21,254		65		637	610
18	13,209					22,195	16,891		42	92	17	170
19	10,581				8,210	19,079	18,142	49,619		119		
20	2,484		4,598		8,018	1,266	11,411	45,223		94	60	
21			177,652		6,808	20,407	16,507	28,689		41	22	
22	40,316		114,464	95,124	6,360	15,265		27,606		16		
23	55,804		173,640	78,735	2,706	17,382	242			28		24
24	31,730			52,762	1,854	13,054	14,743					29
25	62,722	3,916				10,503	8,823			23		8
26	33,934	43,196			1,920	13,471	7,081	22,237		25		
27	30,155	116,793	215,240		1,603	514	7,941	16,538		24		
28		82,812	148,085		1,624	9,326	6,628	12,724				
29	30,862	44,979	79,013	63,287	1,021	6,954	47	7,420				
30	64,272		92,199	61,061	653	6,118	2,611					
31	69,320			46,297	2,136	8,724	2,861					
Totals	477,043	291,696	1,502,076	667,635	223,974	739,955	437,189	955,454	5,396	25,134	13,091	64,630
June Total	20		80,006	1,546								
Balance of Sept. Total									31	7	34	
Oct. Total											41	
Season Totals									706,464	1,056,792	2,032,437	1,689,265

CLOSED

TABLE IV

DAILY CATCH OF SOCKEYE, 1945-1949-1953-1957 FROM CANADIAN CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1945	1949	1953	1957	1945	1949	1953	1957	1945	1949	1953	1957
1			33,417	45	59,066	154,935		36,458		4,683	4,397	
2	5,973		36,323	300	52,659	83,461		102		772	4,038	18
3	4,429		2,287	1,664	41,900	68,945	91,326	100	7,168		4,797	9,419
4	8,109			1,169		63,618	54,171	69	5,005		246	4,962
5	14,153			11		50,283	48,526	83,259	2,010	5,622		3,334
6	10,252		72,602	11	55,085	564	38,493	138,479	1,374	2,413		1,920
7			36,926	4	16,660	539	6,820	52,342		1,704	6,321	1,623
8			22,165	72	16,845	73,872		13		1,302	5,136	
9	11,869		27,665	5	12,530	35,418	474	35		177	6,556	
10	9,223		2,500	4,544	10,395	24,834	20,889	35	8,740	43	7,067	67
11	8,130			82		36,180	60,670	32	5,635	71	89	11,153
12	8,415			16		1,696	37,370	37,148	5,891	3,811		6,060
13	7,451		28,227	9	13,852	337	36,956	104,176	5,843	3,558		3,340
14			16,936	4	6,845	177	19,232	81,261		5,437	32	1,833
15			21,295	8	5,884	32,850		85,266		4,373	14	
16	20,257		24,817	31,194	3,705	16,564		42		2,934	14,700	
17	12,869		4,809	17,150	490	15,140	31,843	39	1,125		8,126	2,753
18	17,045			17,311		15,358	13,370	11	409		2	4,224
19	16,599	2,043		32		5,255	10,734	24,728	333	2,084		2,102
20	14,726	2,102	93,156	31	14,617	3,260	13,397	62,410	461	1,709		763
21		1,443	128,664	39	9,556	3,484	7,066	40,501		1,689		924
22		1,440	112,022	72,343	7,126	15,697		31,916		1,321		
23	41,465		87,223	82,290	5,379	7,780		2				
24	31,041	100		53,055	95	6,792	10,945	6	6,227			
25	39,986	38,191		20,708		6,699	4,916	14	2,836			
26	48,675	28,963		32		5,154	2,929	25,097	2,069	6,139		
27	36,153	49,822	40,629	30	11,212	2,321	4,860	12,635	1,308	1,544		
28		64,646	249,362	29	3,259	2,038	1,024	9,802		455		
29		4,564	130,898	13,283	4,076	12,778		1,836		1,266		
30	109,052		140,486	83,698	2,336	4,585		18				
31	75,422	1,756	7,932	75,647	21	4,189	6,869	6				
Totals	551,294	195,070	1,320,341	474,816	353,593	754,803	522,880	827,838	56,434	53,107	61,521	54,495
May & June Totals	2,088	16,169	85,333	548								
Balance of Sept. Total Oct. & Nov. Totals									6,035	1,650	212 2,056	4 3,059
Season Totals									969,444	1,020,799	1,992,343	1,360,760

CLOSED

TABLE V

THE INDIAN CATCHES OF SOCKEYE SALMON BY DISTRICTS AND THE VARIOUS AREAS WITHIN THESE DISTRICTS, 1953, 1957.

District and Area	1953		1957	
	Catch	*No. of Fishermen*	*Catch*	*No. of Fishermen*
HARRISON-BIRKENHEAD				
Skookumchuck and Douglas	2,468	—	1,730	—
Birkenhead River	8,319	—	3,830	—
TOTALS	10,787	—	5,560	—
LOWER FRASER				
Hope to Chilliwack	4,095	—	2,190	—
Chilliwack to Coquitlam		—	5,425	—
TOTALS	4,095	—	7,615	—
CANYON				
Hope to Lytton	9,414	—	15,200	—
TOTALS	9,414	—	15,200	—
LYTTON-LILLOOET				
Lytton to Lillooet	8,025	—	6,400	—
Gates Creek	—	—	—	—
TOTALS	8,025	—	6,400	—
BRIDGE RIVER RAPIDS				
Rapids	17,852	—	11,100	—
Pavillion	5,449	—	600	—
TOTALS	23,301	—	11,700	—
CHILCOTIN				
Farwell Canyon	632	12	1,486	
Hances Canyon	1,474	10	1,512	
Alexis Creek	3,296	29	5,710	
Siwash Bridge	3,702	17	4,394	
Keighley Holes	420	—	1,590	
TOTALS	9,524		14,692	63*
UPPER FRASER				
Shelley	220		180	
Alkali and Canoe Creek	1,400		400	
Chimney Creek	3,963		3,823	
Soda Creek	1,255		780	
Alexandria	425		230	
Quesnel	920		575	
TOTALS	8,183	81	5,988	82
NECHAKO				
Nautley Reserve	2,501	12*	4,481	11
Stella Reserve	1,690	22*	2,842	12
TOTALS	4,191	34*	7,323	23
STUART				
Fort St. James	12,834	51*	11,628	57
Tachie, Pinchi and Trembleur Villages	8,356	65*	6,421	23
TOTALS	21,190	116*	18,049	80
THOMPSON				
North Thompson River	275	—	240	—
South Thompson River	7,230	—	1,685	—
Thompson River	1,925	—	2,045	—
TOTALS	9,430	—	3,970	—
GRAND TOTALS	108,140		96,497	

* Number of Permits issued to Indians in District.

The Indian catch statistics detailed above are obtained principally from the Protection Officers of the Canadian Department of Fisheries. These inspectors control the taking of sockeye for food by the Indian population residing throughout the Fraser River Watershed.

TABLE VI

SUMMARY OF THE SOCKEYE ESCAPEMENT TO THE FRASER RIVER SPAWNING AREAS, 1945, 1949, 1953, 1957

District and Streams	Period of Peak Spawning	Estimated Number of Sockeye				Jacks	Sex Ratio	
		1945	1949	1953	1957		Males 4-5 yr.	Females 4-5 yr.
LOWER FRASER								
Cultus Lake	Nov. 18-26	9,231	9,301	13,000	20,647	272	7,245	13,130
Upper Pitt River	Sept. 12-18	——	9,500	18,693	12,338	3	6,654	5,681
Pitt Lake	——	——	——	350	——	——	——	——
Widgeon Slough	Nov. 1-12	1,200	650	1,518	1,200	36	594	570
HARRISON								
Big Silver Creek	Sept. 15-20	2,000	2,100	432	389	0	194	195
Harrison River	Nov. 8-12	16,060	8,000	21,328	3,812	19	1,969	1,824
Weaver Creek	Oct. 26-29	12,944	12,520	9,530	20,887	628	8,850	11,409
Misc. Streams	——	199	310	86	——	——	——	——
LILLOOET								
Birkenhead River	Sept. 25-28	96,664	74,300	53,111	24,168	9,632	7,041	7,495
SETON-ANDERSON								
Gates Creek	Aug. 28-31	——	——	78	1,112	0	556	556
Portage Creek	Oct. 30-Nov. 1	——	——	200	470	432	13	25
SOUTH THOMPSON								
Seymour River	Aug. 25-28 Aug. 30-Sept. 3	150	10,772	5,947	14,095	3,375	3,185	7,535
Scotch Creek	Aug. 29-Sept. 2	75	1,000	1,364	2,354	0	1,059	1,295
Lower Adams River	Oct. 27-30	59,725	11,700	177,000	257,614	255,545	778	1,291
Little River	Oct. 30-Nov. 5	7,750	9,615	32,118	34,964	34,580	174	210
South Thompson River	Oct. 30-Nov. 5	——	5	12,614	14,645	14,294	73	278
NORTH THOMPSON								
Raft River	Aug. 30-Sept. 2	3,300	5,900	8,242	7,264	29	3,719	3,516
Barriere River	Sept. 8	——	——	——	38	0	19	19
CHILCOTIN								
Chilko River	Sept. 24-26	192,884	59,000	197,660	140,765	2,301	54,952	83,512
Taseko Lake	Aug. 28-Sept. 1	——	100	4,422	3,667	20	1,466	2,181
QUESNEL								
Horsefly River	Sept. 2-5	3,000	20,000	105,218	226,378	0	83,678	142,700
Mitchell River	Sept. 10	——	350	2,344	2,677	0	991	1,686
NECHAKO								
Endako River	Aug. 30	80	1,100	605	110	0	46	64
Nadina River (early)	Aug. 24-26	300	21,600	38,574	30,000	6	13,821	16,173
Nadina River (late)	Sept. 20-23				29,146	4	14,309	14,833
Nithi River	Aug. 31-Sept. 2	500	1,400	1,208	1,186	0	491	695
Ormonde Creek	Aug. 31-Sept. 2	400	2,500	956	450	0	186	264
Stellako River	Sept. 28-Oct. 1	20,826	104,800	45,057	38,922	400	19,320	19,202
Uncha Creek	——	0	0	209	——	——	——	——
STUART RIVER								
Early Runs								
Ankwil Creek	Aug. 3-10	0	750	5,913	8,285	4	4,462	3,819
Bivouac Creek	Aug. 2-6	0	12,900	8,994	9,464	0	4,524	4,940
Driftwood River	Aug. 10-18	——	450	8,655	45,567	2	26,519	19,046
Dust Creek	Aug. 4-8	4	7,800	16,891	14,827	0	6,079	8,748
Felix Creek	Aug. 3-7	——	——	805	7,081	0	3,540	3,541
15 Mile Creek	Aug. 3-10	0	200	794	511	0	255	256
5 Mile Creek	Aug. 3-10	0	600	2,632	3,821	0	1,910	1,911
Forfar Creek	Aug. 3-7	7,081	80,500	18,054	17,975	36	8,251	9,688
Forsythe Creek	Aug. 3-10	0	1,200	4,500	6,385	0	3,192	3,193
Frypan Creek	Aug. 3-10	0	750	4,566	3,890	0	1,945	1,945
Gluske Creek	Aug. 3-8	2,783	106,000	16,074	21,899	22	10,358	11,519
Kynoch Creek	Aug. 3-7	9,304	185,400	16,676	13,473	54	5,254	8,165
Leo Creek	Aug. 3-7	0	1,700	6,361	10,620	0	5,214	5,406
Narrows Creek	Aug. 3-7	109	20,700	20,604	16,184	49	7,428	8,707
Paula Creek	Aug. 3-7	——	——	1,406	7,918	0	3,959	3,959
Rossette Creek	Aug. 3-6	6,808	152,900	6,355	7,087	14	2,573	4,500
Sakeniche River	Aug. 3-7	0	150	3,382	6,340	0	3,069	3,271
Sandpoint Creek	Aug. 2-6	——	——	2,092	20,914	0	9,474	11,440
Shale Creek	Aug. 3-7	250	3,000	3,809	1,606	2	678	926
25 Mile Creek	Aug. 4-8	0	3,300	2,167	724	0	378	346
Misc. Streams	Aug. 3-7	2	1,112	3,392	10,462	0	5,231	5,231
Late Runs								
Kazchek Creek	Sept. 16-18	952	1,500	7,903	19,582	0	7,833	11,749
Kuzkwa River	Sept. 15-17	——	——	3,686	50,006	0	21,403	28,603
Middle River	Sept. 16-18	22,804	126,400	235,572	332,098	24	132,434	199,640
Pinchi Creek	Sept. 21-26	——	——	72	6,390	0	2,735	3,655
Sakeniche River	Sept. 19-23	——	——	104	592	0	236	356
Tachie River	Sept. 19-23	751	20,000	107,506	118,252	0	50,622	67,630
NORTHEAST								
Upper Bowron River	——	4,094	22,283	13,517	12,069	58	4,743	7,268
TOTALS		482,230	1,116,118	1,274,346	1,663,320	321,841	565,682	775,797

TABLE VII

DAILY CATCH OF SOCKEYE, 1942-1946-1950-1954 FROM UNITED STATES CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1942	1946	1950	1954	1942	1946	1950	1954	1942	1946	1950	1954
1	30			1,332	436	10,851	15,403		180,185	53,804	343	472,636
2				6,000	13,845	8,930	20,880	31,848	118,421	131,748	42	446,988
3	58				11,844		25,058	40,479	10,618	92,579	16	173,977
4	14				12,727	12,163		40,377	906	71,241	3	
5	585			16,232	14,723	7,745		29,883		62,452	18	
6	105			8,509	21,753	15,543	16,961	35,902	378	79,725		117,704
7	563			6,623	24,290	34,751	34,588		7,262		968	115,016
8	225			12,660		47,971	48,134		589	41,085	713	66,966
9	588	CLOSED	CLOSED	8,676	20,550	38,902	41,470	93,065	787	94,111		71,330
10	1,596				23,806		36,990	107,428	4,455	103,522	207	42,100
11					32,832	23,838		91,372	4,070	92,895	393	10,441
12	2,976			22,095	36,887	23,799		97,970		13,347	297	7,646
13	1,977			18,854	46,301	29,522	55,865	46,821	33	7,562	56	8,952
14	939			10,979	40,801	35,193	26,563		13		62	8,796
15	155			10,248		34,903	18,115		13	8,342	46	10,409
16	1,652			12,450	17,384	43,047	36,042	37,003	20	8,599		2 412
17	1,579				24,075		52,889	74,421	144	21,893	898	1,229
18					52,395	27,381		39,791	124	9,173	483	635
19	4,220			38,708	74,633	43,713		28,893		11,005	2,427	397
20	2,874			30,461	88,366	63,070	138,217	58,738	77	705	365	1,328
21	10,993			27,871	162,510	64,503	153,568		250		124	1,399
22	5,232			24,719		55,089		91,515	106	4,882	67	1,239
23	9,551			32,768	263,589	54,416	100,173	114,790	130	2,197		457
24	7,219				251,749		131,748	84,516	3,002	1,696	12	308
25		305			192,006	89,452	107,788	135,827	773	1,846	21	24
26	12,747	87		1,325	159,915	134,956		167,812			14	358
27	7,930			75,112	302,628	290,642	83,504	233,032	1,350	CLOSED	17	401
28	17,316	172		51,961	150,166	542,836	38,212		15,418		18	430
29	12,500	321		43,253		366,879		406,321	16,468		11	159
30	17,542	189		35,277	59,360	531,426	16,818	292,094	26,608			96
31	9,167	4,302	14,286		280,408			359,913				
Totals	130,333	5,376	14,286	496,113	2,379,979	2,631,521	1,198,986	2,739,811	392,200	914,409	7,621	1,563,833
June Total				6,033								
October Total									32,680	4		468
Season Totals									2,935,192	3,551,310	1,220,893	4,806,258

TABLE VIII

DAILY CATCH OF SOCKEYE, 1942-1946-1950-1954 FROM CANADIAN CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1942	1946	1950	1954	1942	1946	1950	1954	1942	1946	1950	1954
1	3,020			2,204	257	946	25,874		102,430		312	91,065
2	2,277			252		947	26,390	152,661	170,801	67,498		152,331
3	4,054				18,857		30,775	72,581	202,875	146,709	120	120,485
4					8,899			34,608	164,307	190,107	19,760	
5				14,601	7,276	72		58,230		144,135	12,062	9,963
6	12,080			10,426	6,169	230	11,031	37,383		93,529	26,320	166,818
7	8,995			7,711	8,744	71	53,074		127,307		978	128,713
8	8,877			7,814		14,075	31,653		269,416		150	96,413
9	6,950	CLOSED	CLOSED	502		7,475	20,121	423	416,793	120,686		101,374
10	5,267				37,239		21,189	3,742	284,200	84,121	307	148,585
11					20,035		296	3,897	315,568	599,942	50	
12				9,667	14,224	61,254		4,710		80,620	50	
13	8,774			8,448	21,446	29,700	14,679	1,432		312,505	58	206,257
14	2,533			7,200	21,348	21,513	49,953		559,614		16	151,204
15	6,534			7,159		16,307	29,973		688,050		16	180,631
16	5,264			1,938		18,042	32,366	108,875	85,579	327,366		85
17	4,623				45,661		38,300	92,754		218,704	16	569
18					25,344			80,512		162,323	15	901
19				18,838	43,370	53,008		57,100		151,372	15	904
20	14,721			13,149	33,322	22,382	71,775	8,188		82	15	356
21	6,664			10,963	48,105	22,574	42,085		1,730		10	606
22	9,316			16,266		27,513	29,217		217		8	313
23	8,112			9,088		33,499	45,742	159,874	1,547	356,118		307
24	6,827				102,677		52,525	235,418		202,150	2	97
25		275			86,859		21,972	213,529		25	29,233	47,355
26	7,708	275		71,681	64,779	165,805		539,766			10,835	15,658
27	7,312			41,923	76,335	324,065	3,118	265,506		CLOSED	10,663	10,204
28	7,875			33,239	70,688	89,112	40,252		3,775		4,980	19,086
29	10,257	187		33,734		36,545	19,577					9,287
30	11,670	188		17,754		29,361	13,918	520,223				4,435
31		188	31,679		86,985		7,737	48,515				
Totals	169,710	1,113	31,679	344,557	848,619	974,496	733,592	2,699,927	3,394,209	3,257,992	115,991	1,664,002
8" Gill Nets May & June Totals	2,042	1,027 575	2,042	7,990		1,126						
Oct. & Nov. Totals									633,019	3,869	11,165	5,987
Season Totals									5,047,599	4,240,198	894,469	4,722,463

TABLE IX

SUMMARY OF THE SOCKEYE ESCAPEMENT TO THE FRASER RIVER SPAWNING AREAS, 1942, 1946, 1950, 1954

District and Streams	*Period of Peak Spawning*	*Estimated Number of Sockeye*			
		1942	1946	1950	1954
LOWER FRASER					
Cultus Lake	Nov. 18-21	37,305	33,284	30,595	23,756
Upper Pitt River	Sept. 10-15	2,048+	18,520	42,800	17,624
Widgeon Slough	Nov. 8-10	529	1,404	600	1,000
HARRISON					
Big Silver Creek	Sept. 13-24	7+	——	25	279
Harrison River	Nov. 7-10	112	15,631	33,860	28,800
Weaver Creek	Oct. 20-21	19,000	36,000	30,700	28,773
Misc. Streams		942	1,200	350	
LILLOOET					
Birkenhead River	Sept. 25-27	87,000	90,000	72,767	41,201
SETON-ANDERSON					
Gates Creek	Aug. 28-Sept. 4				47
Portage Creek	Oct. 18-21			few	3,505
SOUTH THOMPSON					
Seymour River	Sept. 1-4	1,950	2,600	12,000	26,258
Lower Adams River	Oct. 10-20	2,168,000	1,841,000	850,500	1,532,820
Little River	Oct. 10-20	400,000	419,000	376,000	427,850
Upper Adams River	Sept. 3-8	0	0	0	205
South Thompson River	Oct. 15-20	Present	92,000	41,500	87,611
Lower Shuswap					17,462
NORTH THOMPSON					
Raft River	Aug. 24-Sept. 2	450	3,000	6,400	10,551
CHILCOTIN					
Chilko River	Sept. 23-25	34,100	58,950	29,800	36,534
Taseko Lake	Sept. 8-10	——	——	500	3,500
QUESNEL					
Horsefly River	Sept. 2-5	0	58	400	279
Mitchell River	Sept. 10-15	0	2	0	18
NECHAKO					
Endako River		309	368	900	P
Nadina River	Aug. 26-Sept. 14	62	66	1,950	2,219
Nithi River	Aug. 29-30	1	4	125	46
Ormonde Creek	Aug. 24-26	54	193	732	538
Stellako River	Sept. 25-27	48,064	245,200	145,100	142,632
STUART RIVER					
Early Runs					
Ankwil Creek	Aug. 10-13	——	——	67	56
Bivouac Creek	Aug. 3-7	——	——	2,320	387
Driftwood River	Aug. 15-19	——	5	144	387
Dust Creek	Aug. 8-11	——	——	1,125	1,168
Felix Creek	Aug. 3-7	——	——	——	218
15 Mile Creek	Aug. 10-13	——	——	54	41
5 Mile Creek	Aug. 10-13	——	——	262	5
Forfar Creek	Aug. 3-7	3,244	1,822	10,259	5,702
Forsythe Creek	Aug. 10-13	——	——	2	27
Frypan Creek	Aug. 10-13	——	——	69	266
Gluske Creek	Aug. 3-7	1,734	2,905	11,007	5,292
Kynoch Creek	Aug. 3-7	1,949	1,843	24,644	14,088
Leo Creek		——	——	97	4
Narrows Creek	Aug. 4-8	100	277	2,265	2,756
Paula Creek	Aug. 3-7	——	——	——	36
Rossette Creek	Aug. 3-7	929	2,641	6,260	3,836
Sakeniche River		——	——	234	0
Shale Creek	Aug. 10-13	50	61	628	279
25 Mile Creek	Aug. 10-13	——	——	521	207
Misc. Streams	Aug. 4-8	——	——	42	531
Late Runs					
Kazchek Creek	Sept. 10-13	1	60	243	83
Kuzkwa River		——	——	——	0
Middle River	Sept. 13-16	Present	488	2,600	3,927
Pinchi Creek		——	——	——	5
Sakeniche River		——	——	——	0
Tachie River	Sept. 13-16	——	14	200	1,529
NORTHEAST					
Upper Bowron River		1,826	6,951	16,266	10,774
TOTALS		2,809,766+	2,875,547	1,756,913+	2,485,112+

more accurate measure of abundance of pink salmon a "trap index of abundance" was designed by Rounsefell and Kelez.[1] To illustrate the impact of the Hell's Gate slide on the pink salmon fishery in United States Convention waters a graph of the trap index of abundance of pink salmon for the cycle years 1911 to 1933 is reproduced in Figure 1.

A preliminary study of the abundance of pink salmon in United States Convention and adjacent waters indicates that since the drastic decline in 1915, two other periods of decline have occurred in the size of the Fraser run. After 1931 the catch declined steadily until it was, economically, almost unimportant in 1943. The cause of this decline is not known and its delineation remains a responsibility of the Commission if it is fully to understand the needs of proper management in future years. The pink salmon catch in United States waters increased rapidly in 1945 and again in 1947, but has since declined steadily. Coincident with the continued decline in the United States catch since 1947 has been the expansion of an intense Canadian fishery for this species in Juan de Fuca Strait, the development of the nylon gill net, the drum seine and the Puretic power block with a resultant increase in the effectiveness of the United States fishing fleet which apparently has not been offset by regulatory restrictions. A record of the catches of pink salmon in United States Convention and adjacent waters is presented in Figure 2.

The Commission in initial discussions with its advisory committee regarding regulatory control of the 1957 pink salmon fishery had a background of information that indicated:

1. The pink salmon runs to the Fraser River were far below their maximum potential and increased escapements were required, particularly above Hell's Gate.
2. The Fraser River pink salmon populations were apparently declining in abundance.
3. There was some evidence of overfishing in the preceding cycle year due to the increased efficiency of both the Canadian and United States fishing fleets which was not adequately compensated for by increased regulatory restrictions.
4. Spawning conditions in the brood year were extremely adverse for some of the major pink salmon populations producing the 1957 run in Convention waters.

The 1957 Pink Salmon Fishery

As predicted by the Commission, the 1957 run of pink salmon in Convention waters was considerably below average in numbers. The United States pink catch of 2,777,366 fish was 51.32 per cent of the total while the Canadian catch of 2,634,720 fish was 48.68 per cent of the total catch of 5,412,086 pink salmon taken in Convention waters during 1957 (Tables X and XI).

[1] The Salmon and Salmon Fisheries of Swiftsure Bank, Puget Sound, and the Fraser River, U.S. Bur. Fish., Bull. 27, 1938.

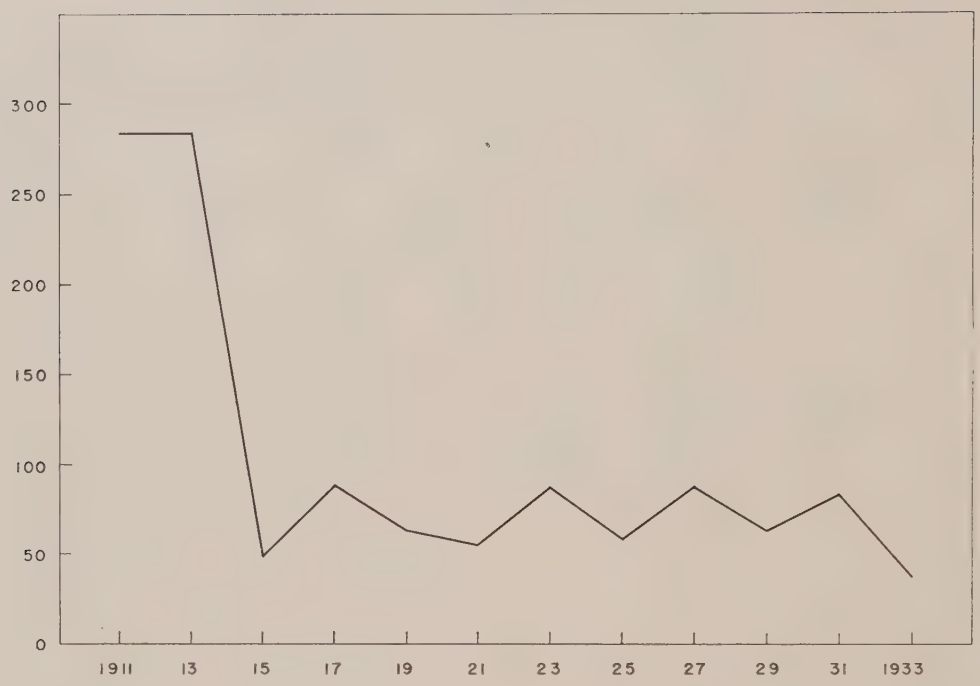


FIGURE 1.—Trap index of abundance of pink salmon in United States Convention waters 1911-1933. Bulletin 27, U.S. Bureau of Fisheries, 1938.

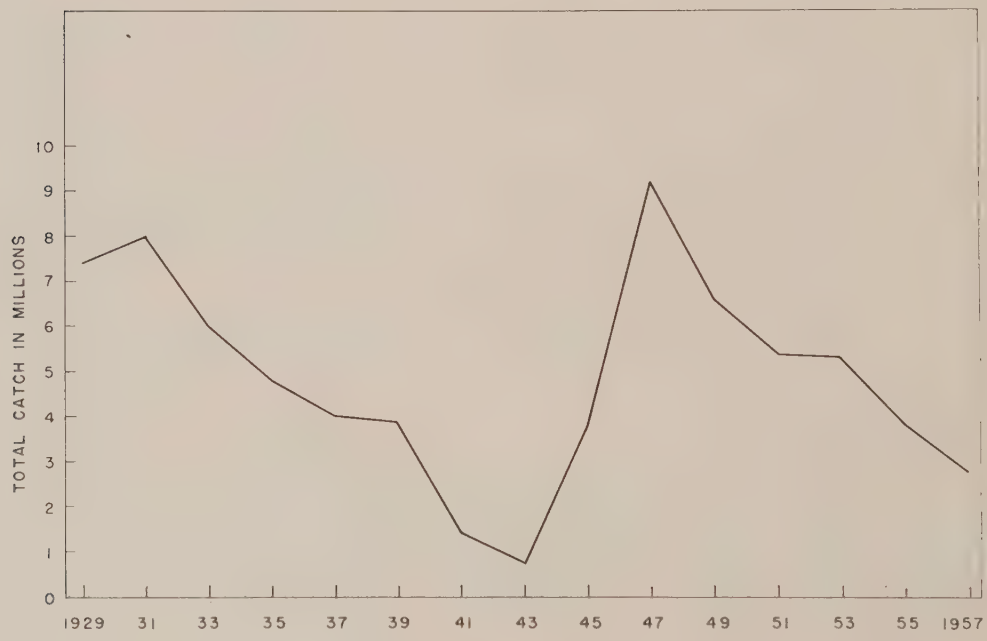


FIGURE 2.—Annual catch of pink salmon in United States Convention and adjacent waters for the years 1929-1957.

Percentage of the Total Catch of Pink Salmon Taken in Convention Waters by United States and Canadian Fishermen in 1957 and in the Previous Cycles not Under International Control

	United States		*Canada*	
Year	*Catch*	*Percentage*	*Catch*	*Percentage*
1957	2,777,366	51.32%	2,634,720	48.68%
1955	4,685,984	53.16%	4,129,063	46.84%
1953	4,951,429	54.45%	4,142,117	45.55%
1951	5,086,284	63.80%	2,885,514	36.20%

The three day weekly closure in the Juan de Fuca Strait fishery and the increase of the United States weekly closed season from three to four days for three of the six principal weekly fishing periods provided satisfactory escapement in spite of the serious reduction in the size of the 1957 run. A drifting school of pink salmon unexpectedly remained in the West Point Roberts area during the first few days of September and resulted in unusually large catches by United States purse seines. This, combined with below normal effectiveness of the gill net fishery in the Fraser River area, made it difficult to obtain perfect division of the catch.

In an attempt to continue a fishery for obtaining Canada's share of the catch, without interrupting the required weekly escapement, an experimental regulation was placed into effect for seven individual fishing days prior to the final closure of the Fraser River area on September 20. The regulation was designed to permit fishing on the non-migrating fish which were known to drift in the Strait of Georgia for ten to fourteen days before proceeding upstream to their respective spawning grounds. A river closure line was projected (as previously described under *1957 Regulations*) which permitted fishing to continue in the deep waters of the Strait of Georgia but prohibited fishing in the Fraser River proper or in the shallow water which extends from five to six miles offshore from the mouth of the river. The success of the experimental regulation was established by the fact that substantial numbers of pink salmon were found escaping upstream on September 12 and 13 when fishing was permitted in the Gulf area. Had the river remained open to fishing 98 per cent of the escapement on these two days would have been caught. An important factor favoring the experimental regulation is that the Gulf gill net fishery operates almost exclusively at night and the fish moving into the river during the daylight tides are unobstructed by the physical barrier created by several hundred gill nets. A total of 313,290 pink salmon were taken during the seven added days of Gulf fishing and this greatly reduced the difference in the catch between the two countries. The daily catch of pink salmon in Convention waters is presented in Tables XII and XIII.

Proper regulatory management of the Fraser River pink salmon populations requires an accurate determination of the timing of each individual population as it migrates through the several distinct fishing

areas extending from the entrance of Juan de Fuca Strait to the upper fishing limits in the Fraser River at Mission, B.C. Information must also be available on the catch and escapement of the major spawning populations. In the case of the sockeye salmon, the catch in Convention waters is almost exclusively of Fraser River origin and a system of allocating the catch by race and by time and of enumerating the individual spawning populations has been in operation for several years.

A co-operative pink salmon tagging program conducted by the Washington Department of Fisheries and the Fisheries Research Board of Canada during 1943 and 1945 revealed, among other things, that populations of pink salmon destined for streams located outside Convention waters were available to the fishery in Convention waters. A summary of the general knowledge provided by the tagging programs referred to above is as follows:

1. Pink salmon entering Juan de Fuca Strait are destined for: a. streams in the Olympic Peninsula - Puget Sound area, b. the Fraser River, and c. Canadian streams lying north of the Fraser River particularly in the Burrard Inlet and Howe Sound regions.
2. Pink salmon spawning in the Fraser River produce the major share of the catch in Convention waters.
3. The runs of pink salmon through Convention waters destined for streams other than the Fraser tend to be earlier than those destined for the Fraser River although a considerable overlap exists in the timing of the two groups of fish.
4. Some of the pink salmon destined for streams in the State of Washington particularly to the Skagit and Stillaguamish Rivers appear to delay in the Rosario Strait - West Beach fishing district and are subject to a fairly heavy fishery in that area.

Unfortunately the original tagging programs were primarily exploratory and did not provide the necessary information for sound regulation. An investigation is required involving extensive marine tagging, spawning ground enumeration and adequate recovery of tags in each major river system contributing to the catch in Convention waters if the contribution of streams other than the Fraser to that catch is to be known both as to time and number. An alternate plan for obtaining the same results appears possible since the various populations of fish destined for streams other than the Fraser River are normally significantly different to Fraser pinks in average weight and timing. On the basis of these differences it is believed that the catch might be separated into components of Fraser and non-Fraser origin. Both plans are under study by the Co-ordinating Committee representing the State of Washington, Canada, and the International Pacific Salmon Fisheries Commission as provided for in Article VI of the Pink Salmon Protocol - Provision I Sockeye Fisheries Convention as presented herein. Subject to the approval of all agencies concerned, a co-ordinated investigation, currently being outlined, will be carried out in 1959.

Escapement

In the development of an adequate enumeration program for determining both the total Fraser River pink salmon escapement and the escapement to the individual spawning areas the Commission had the benefit of considerable information from the protection staff of the Canadian Department of Fisheries. Their reports indicated that fish spawned in the main Fraser where the water was too turbid to observe the fish; also that fall floods in the tributary streams usually created very adverse conditions for proper observation. Recognizing these factors the Commission designed a program for tagging the escaping fish near Mission, B.C. at a point known as the Glen Valley Bar. A total of 12,910 fish were captured by drag seines at this point and then released after tagging. Since the fish were tagged throughout their upstream migration it was possible, by recovering the tags on the spawning ground, not only to obtain an estimate of the total escapement but also important information on the time of passage of the individual populations through the river fishery (Figure 3).

Fortunately no floods occurred during the spawning of the 1957 run and it was possible to enumerate quite accurately each individual spawning population except the Main Fraser population either by tagging, live count indices or especially designed indices. For the Main Fraser, it was possible to total all other populations and allocate the remainder unaccounted for in the totalled estimate to this population. Since 80,000 dead fish were actually examined along the gravel bars between the mouths of Jones Creek and the Vedder River the escapement estimate recorded for the Main Fraser River is considered reasonably accurate. It is interesting to note that estimates of total escapement calculated from recovery of Glen Valley tags at each of the five major spawning areas are approximately the same.

An analysis of Figure 3 and Table XIV indicates that of the total escapement of 2,243,682 pink salmon almost half of the fish spawned in the Main Fraser; also that all of the pink salmon populations can be grouped into early or late classifications both as to time of migration through the commercial fishery and as to spawning time. It can be seen that the regulation of the fishery is concerned with adequate escapement of only two groups of fish since the individual populations of either the early or the late runs cannot be segregated in relation to time.

In summary it may be stated that enumeration methods have been designed which were completely effective during the Commission's first year of operation. These proven methods of enumeration should be adequate in future years, even under the fairly adverse conditions created by normal fall floods in tributary spawning areas.

The total escapements of earlier cycle years are not known for reasons already stated hence the escapement listed in Table XIV cannot be compared with the escapement of any previous years. General field information and a preliminary analysis of the 1955 river fishery indicates that the 1957 escapement was approximately the same as that which occurred in 1955

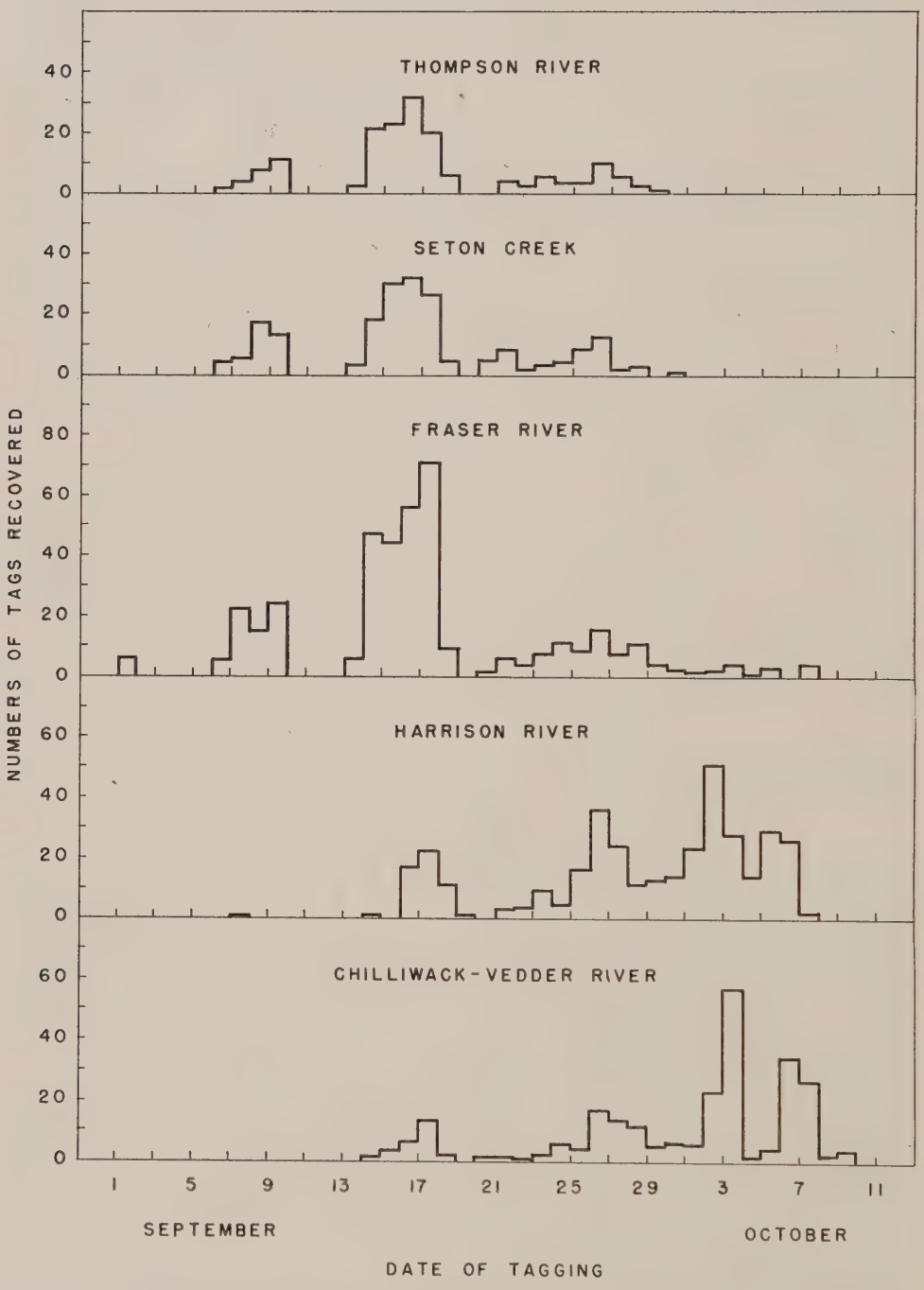


FIGURE 3.—Times of passage of pink salmon runs through the Fraser River commercial fishery in 1957.

even though the total run in 1957 was substantially smaller. The 1957 escapements to Harrison River and Seton Creek, representing late and early runs respectively appear to be adequate for the available spawning areas. The number of fish observed in all other spawning areas of both the late and early run categories are believed to be substantially below the number of fish required to produce a maximum run. Unfortunately, it appears necessary to exceed the number required for maximum production in both Seton Creek and Harrison River if the other populations are to be brought up to a favorable maximum.

Management Research Program

The Commission, having a background of twenty years experience in the scientific investigation of the factors affecting the productivity of Fraser River sockeye, arrived at an early agreement on the principal investigations to be undertaken in respect to its responsibilities under the Pink Salmon Protocol. The details of the approved investigations follow:

1. The establishment of a daily statistical record of pink salmon catches by gear and by areas within Convention waters.
2. A co-ordinated program to be undertaken by the Canadian Department of Fisheries, the Fisheries Research Board of Canada, the Washington Department of Fisheries and the Commission for studying the migratory movements of the pink salmon which enter Convention waters. The purpose of the co-ordinated program was to determine the rate of movement, direction of movement, time of movement, the daily catch by area, and the escapement of the individual stocks of pink salmon entering Convention waters.
3. The development of reliable spawning enumeration methods.
4. A measurement of the environmental factors functioning during the freshwater existence of the species.
5. A survey of the size and physical characteristics of the individual spawning areas.
6. The development of an index of freshwater survival in the major spawning areas.
7. A statistical and historical analysis of the fishery to determine the established potential productivity of the Fraser River watershed.
8. A study of possible factors affecting survival of young pink salmon in the estuarial areas adjacent to the mouth of the Fraser River.

All of the above investigations were successfully initiated in 1957 either in whole or in part except item 8 which was delayed pending the accumulation of data pertaining to freshwater survival.

A view of the extensive pink salmon spawning grounds of the main Fraser below Hope, B.C. where over 1,000,000 pink salmon spawned in 1957. The exposed gravel bar shows some of the tens of thousands of false redds dug by the pink salmon in that portion of the gravel bars exposed later in the season by normal declining water levels. A careful survey revealed that the fish actually spawned only in the gravel areas which were not uncovered by receding winter water levels.

TABLE X

PINK CATCH BY GEAR

United States Convention Waters

Year	Purse Seines			Gill Nets			Reef Nets			Troll		Total Catch
	Units	Catch	Percentage	Units	Catch	Percentage	Units	Catch	Percentage	Catch	Percentage	
1951	300	4,544,238	89.34	109	101,214	1.99	138	402,774	7.92	30,198	0.59	5,086,284
1953	313	4,255,663	85.95	179	219,017	4.42	113	409,607	8.27	67,142	1.36	4,951,429
1955	359	4,037,448	86.15	395	306,744	6.55	95	276,848	5.91	64,932	1.39	4,685,984
1957	351	2,216,119	79.79	638	246,296	8.87	99	149,094	5.37	165,248	5.95	2,777,366

Canadian Convention Waters

Year	Purse Seines			Gill Nets			Traps			Troll		Total Catch
	Units	Catch	Percentage	Units	Catch	Percentage	Units	Catch	Percentage	Catch	Percentage	
1951	73	1,970,996	68.31	1,169	776,160	26.90	5	123,080	4.26	15,278	0.53	2,885,514
1953	76	2,950,595	71.23	1,216	1,030,194	24.88	4	86,220	2.08	75,108	1.81	4,142,117
1955	104	2,931,552	71.00	1,400	1,039,406	25.17	5	126,036	3.05	32,069	0.78	4,129,063
1957	105	1,435,924	54.50	1,473	1,126,085	42.74	5	31,309	1.19	41,402	1.57	2,634,720

NOTE: Gear counts represent the maximum number of units delivering pinks on any single day.

TABLE XI

LANDINGS AND PACKS OF PINK SALMON FROM CONVENTION WATERS

	United States	*Canada*	*Total*
1957			
Total Landings (No. of Pinks)	2,777,366	2,634,720	5,412,086
Share in Fish	51.32%	48.68%	
Total Pack (48 lb. Cases)	201,719	187,792	389,511
Share in Pack	51.79%	48.21%	
1957 Pack	201,719	187,792	389,511
1955	376,040	331,348	707,388
1953	369,790	309,348	679,138
1951	400,510	227,215	627,725
1949	437,490	223,693	661,183
1947	572,834	227,232	800,066
1945	284,306	66,656	350,962

TABLE XII

DAILY CATCH OF PINKS, 1951-1953-1955-1957 FROM UNITED STATES CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1951	1953	1955	1957	1951	1953	1955	1957	1951	1953	1955	1957
1		72		1,387	6,584	658	10,206	3,196	16,625	215,982	227,183	1,736
2	1	44		2,631	6,175	548	18,259	3,254	222,043	283,990	44,628	310,276
3	32	14		1,746	3,186	981	11,920	2,935	256,779	198,668	4,307	346,278
4	4	8	19	1,067	503	13,167	1,662	1,240	348,382	133,442	235,048	199,845
5		27	18	1,105	296	17,219	2,026	21,264	264,924	27,449	191,752	1,587
6	14	112	16	622	10,227	15,583		16,467	154,274	249,129	234,450	374
7	1	132	14	1,133	8,364	18,517	10,114	4,119	55,237	230,714	183,711	352
8		61		348	12,073	3,517	27,510	3,006	1,018	210,972	144,547	312
9	14	152		496	8,126	3,439	21,795	4,927	141,071	187,255	45,717	144,137
10	24	513		381	456	28,694	18,662	3,187	144,509	161,311	3,694	82,438
11	48	124	107	286	1,537	26,968	15,754	1,196	234,320	117,382	140,081	115,712
12	34	47	118	366	2,140	31,801	5,195	30,020	211,211	15,812	136,889	57,192
13	142	126	228	270	29,312	52,003		47,225	132,931	146,536	28,702	922
14	3	127	188	289	37,171	51,551	20,165	59,935	131,293	120,644	74,924	138
15	41	204		628	41,052	16,873	34,519	4,137	162	85,670	39,451	
16	161	671		819	41,527	18,544	37,852	4,464	153,473	79,155	4,234	40,133
17	251	1,322		1,048	39,174	71,915	60,000	2,265	165,472	76,106	937	50,380
18	230	95	817	829	6,142	69,966	47,093	3,051	154,541	16,765	146,128	35,730
19	317	84	779	1,070	26,480	87,793	20,324	106,171	120,720	85	106,574	146
20	349	2,215	764	1,070	66,220	103,659	22,569	96,429	134,315	73,257	81,781	49
21	75	2,041	817	929	122,443	124,554	100,604	85,885	97,316	37,078	68,165	
22	24	1,090		3,950	168,901	4,168	105,479	114,601	155	16,158	67,101	
23	1,316	2,149		4,265	161,628	13,255	195,738	2,842	58,910	9,847	2,171	18,459
24	1,285	311		3,226	65,942	176,166	227,052	1,323	61,914	7,485	80	12,369
25	1,719	215	2,955	3,129	9,710	156,431	193,123	1,113	43,290	3,693	94,778	5,890
26	1,567	216	1,550	1,921	1,674	197,854	93,537	231,640	52,469	44	31,522	
27	1,517	6,290	2,449	758	110,333	168,491	44,975	192,005	25,294	1,027	42,483	
28	3	6,094	3,134	422	186,519	184,068	231,355	135,861	5,279	548	46,980	
29	22	4,557		3,872	214,785	19,301	175,497	99,234	12	749	18,611	
30	6,324	6,629		8,103	140,272	210,896	226,867	3,025	9,023	162	3,299	
31	7,030	960		6,553	119,546	317,704	228,855	2,205				
Totals	22,548	36,702	13,973	54,719	1,648,498	2,206,284	2,208,707	1,288,222	3,396,962	2,707,115	2,449,928	1,424,455
June Total		256	1	9,969								
Oct. Total									18,276	1,072	13,375	1
Season Totals									5,086,284	4,951,429	4,685,984	2,777,366

TABLE XIII

DAILY CATCH OF PINKS, 1951-1953-1955-1957 FROM CANADIAN CONVENTION WATERS

Date	JULY				AUGUST				SEPTEMBER			
	1951	1953	1955	1957	1951	1953	1955	1957	1951	1953	1955	1957
1		321		71	2,155	747	7,732	905	368	140,481	138,929	496
2	0	231		70	4,754	788	7,345	528	68,958	205,101	68,771	192,553
3	2	177		69	5,521	7,345	16,849	500	163,168	204,671		180,643
4	2	181	22	74	17	16,374	11,565	749	156,890	177,927		148,273
5	4	119	11	75	46	18,645	7,143	21,421	155,725	2,149	300,565	92,175
6	4	207	12	68	6,149	16,894		41,915	160,950	1,473	176,337	59,156
7		280	19	68	8,338	8,935		43,709	27,236	293,732	182,967	352
8		192		77	7,827	1,184	20,981	992	796	160,937	137,628	262
9	9	306		77	15,234	1,195	32,956	925	16,000	253,872	118,738	20,576
10	9	202		77	13,940	37,383	45,737	763	81,811	271,115		113,635
11	10	109	77	82	128	47,426	53,495	1,270	125,693	45,421		96,983
12	73	137	141	82	122	31,931	41,474	89,606	118,640	1,137	95,261	57,498
13	74	375	120	72	26,840	60,194	1,323	54,752	80,902	949	229,213	40,723
14		447	208	72	33,417	88,862		118,816	68,378	60,912	192,623	182
15		945		88	20,373	1,735	67,874	82,195	244	64,308	32,043	94
16	33	1,288		157	21,039	1,056	73,033	2,244	30,746	133,073	5,436	44,863
17	32	733		171	20,943	55,156	76,708	1,681	116,730	83,364		70,748
18	46	208	899	191	197	39,790	63,869	689	58,679	1,103		33,165
19	131	208	592	112	52,295	69,361	95,048	80,606	32,595	587	19,398	42,899
20	276	1,457	1,081	108	58,436	131,994		78,322	27,821	310	10,222	66,145
21		2,222	1,561	79	98,681	150,923		91,898	21,980	610	5,141	
22	9	9,864		3,211	98,162	703	155,065	111,428	486	565	6,753	
23	864	36,778		7,958	34,667	1,353	164,758	718	302	522	3,264	1,455
24	873	231		5,239	67,148	140,369	214,263	733	52,719	227		1,628
25	881	234	5,208	357	40	165,643	213,487	828	58,769	4,508		1,498
26	1,157	355	6,633	176	52,855	139,633	268,442	114,271	41,219	81	1,081	226
27	1,143	6,356	4,200	134	76,208	218,026		85,271	230	58	706	139
28	50	10,189	3,531	131	96,184	259,977		115,520	109	4,464	1,094	
29	26	7,536		2,258	113,445	2,158	252,759	165,839	45	1,215	5,104	
30	2,998	9,710		8,466	87,483	1,915	239,641	1,000	67	55	407	22
31	1,711	5,308		15,213	46,471	185,196	172,174	933				
Totals	10,417	96,906	24,315	45,083	1,069,115	1,902,891	2,303,721	1,311,027	1,668,256	2,114,927	1,731,681	1,266,389
May & June Totals	6	887	16	2,911								
Oct. & Nov. Totals									137,720	26,506	69,330	9,310
Season Totals									2,885,514	4,142,117	4,129,063	2,634,720

TABLE XIV

SUMMARY OF THE PINK SALMON ESCAPEMENT TO THE FRASER RIVER SPAWNING AREAS, 1957

District and Streams	*Period of Peak Spawning*	*Estimated Number of Pink Salmon*
EARLY RUNS		
LOWER FRASER		
Main Fraser	Sept. 20-30	1,082,466
HARRISON		
Chehalis River	Oct. 6-12	9,336
FRASER CANYON		
Coquihalla River	Sept. 24-26	4,433
Jones Creek	Sept. 29-Oct. 5	1,493
Lorenzetti Creek	Sept. 29-Oct. 4	6
Silver Creek	Sept. 26-30	549
Hunter Creek	Sept. 22-25	13
American Creek	Oct. 3	4
Spuzzum Creek	Oct. 3-18	1,076
Nahatlatch River	Oct. 5-10	208
Anderson Creek	Sept. 28-Oct. 3	824
Stein River	Oct. 7	185
Churn Creek	Oct. 10-12	8
SETON-ANDERSON		
Seton Creek	Oct. 1-10	58,810
Portage Creek	Oct. 8-10	1,867
THOMPSON		
Thompson River	Oct. 1-9	266,329
Nicola River	Sept. 26-30	1,560
Bonaparte River	Sept. 22-Oct. 1	653
Deadman River	Oct. 1	564
TOTAL		1,430,384
LATE RUNS		
LOWER FRASER		
Stave River	Oct. 25-28	6,500
Whonnock Creek	Oct. 22-25	549
Suicide Creek	Oct. 15	2
Silverdale Creek	Oct. 20-25	52
Kanaka Creek	Oct. 20-23	153
South Alouette River	Oct. 25-28	8
North Alouette River	Oct. 25	8
Silver Creek (Pitt Lake)	Oct. 25-30	239
Coquitlam River	Nov. 1	6
Upper Pitt River	—	0
Upper Sumas Creek	—	0
Legace Creek	—	0
Beaver Creek	—	0
HARRISON		
Harrison River	Oct. 19-25	585,798
Weaver Creek	Oct. 25-29	346
Squakum Creek	—	0
Sliver Creek (Harrison Lake)	—	0
CHILLIWACK-VEDDER		
Chilliwack-Vedder River	Oct. 10-25	212,334
Sweltzer Creek	Oct. 18-25	6,874
Little Chilliwack Creek	Oct. 15	68
Brown Creek	Oct. 15	44
FRASER CANYON		
Kawkawa Creek	Oct. 20-25	317
Popkum Creek	—	0
Emory Creek	—	0
Yale Creek	—	0
TOTAL		813,298
GRAND TOTAL		2,243,682

1957 PUBLICATIONS

1. Annual Report of the International Pacific Salmon Fisheries Commission for 1956.
2. Progress Report.
   Seasonal and Annual Changes in Availability of the Adult Crustacean Plankters of Shuswap Lake, by F. J. Ward.

PRINTED BY
CAMPBELL & SMITH LTD.
820 RICHARDS STREET, VANCOUVER 2, B.C.

27